M240G

MAINTENANCE
AND
OPERATOR'S
MANUALS

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FOREWARD

The M240G machine gun is an infantry variant of the U.S. M240 7.62mm coaxial machine gun and similar to the Belgian MAG-58. In order to properly maintain the M240G prior to the publication of a technical manual, the following manual may be used.

This manual is a combination of the maintenance manuals for the MAG-58 and M240/M240C/M240E1 machine guns. The index on the next page directs the user to the section in the manual that covers the item being maintained.

In the event of any problems or questions either with the machine gun or manual, please feel free to call the Sales Department of FN Manufacturing at 803-736-0522. We're available 0730-1700 EST, Monday through Friday.

M240G

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FN MANUFACTURING, INC.

General Purpose Machine Gun

"M.A.G."

Cal. 7.62 mm NATO

&

OPERATOR'S MANUAL FOR
MACHINE GUN, 7.62MM, M240 (1005-01-025-8095)
M240C (1005-01-085-4758)
M240E1 (1005-01-252-4288)

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General Purpose Machine Gun

"M.A.G."

Cal. 7.62 mm NATO

STANDARD
COAXIAL
AIRCRAFT

FABRIQUE NATIONALE HERSTAL
Société Anonyme

A 23 **B-4400 HERSTAL (BELGIUM)**

100 INTRODUCTION

101 GENERAL DESCRIPTION

The FN machine gun "M.A.G." * is a fully automatic weapon, air cooled, belt fed and gas operated, which has been designed and developed by FN for the use of modern infantry.

- It is capable of sustained high volumes of fire,—firing cycles can. in fact, continue for prolonged periods without adverse effect on the weapon;
- the rate of fire can be regulated;

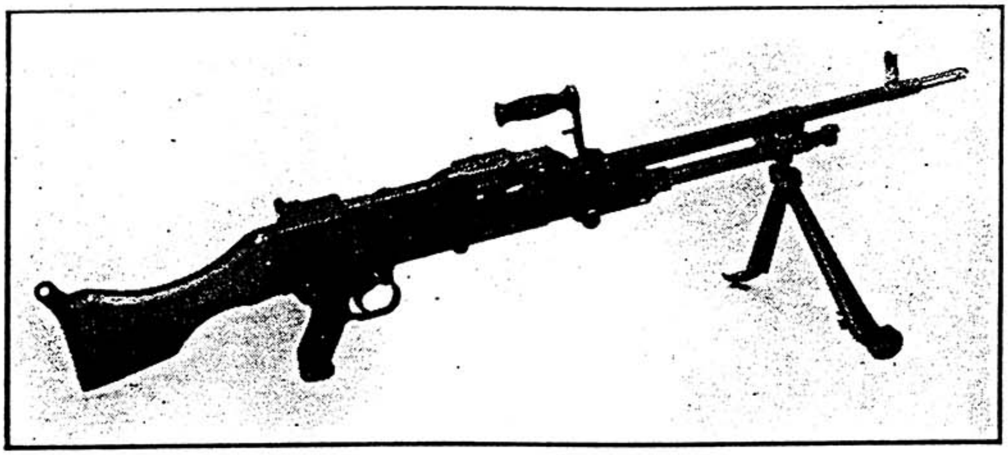

Fig. 1
The FN-M.A.G. on its bipod (right side)

- it functions very smoothly, thus eliminating incidents due to violent action of the mechanism, a defect in many existing weapons;
- it is a relatively lightweight weapon, considering that it can easily be adapted for use either as a light machine gun, firing off the bipod, or as a heavier type, firing from a tripod;

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* "M.A.G." for Mitrailleuse à gaz.

- its simplicity makes both stripping and assembling quick and easy operations for the soldier when in action and also speeds up the instruction of recruits;
- its gas regulation system provides the reserve of power which enables it to function perfectly under adverse conditions in the field: mud, grit, extremes of temperature, etc.

If required by the customer, the weapon can be supplied without a butt. In this event, the weapon is provided with a buffering device similar to that mounted in the butt.

This form of the gun is required for vehicular mounting and for use in entrenched positions.

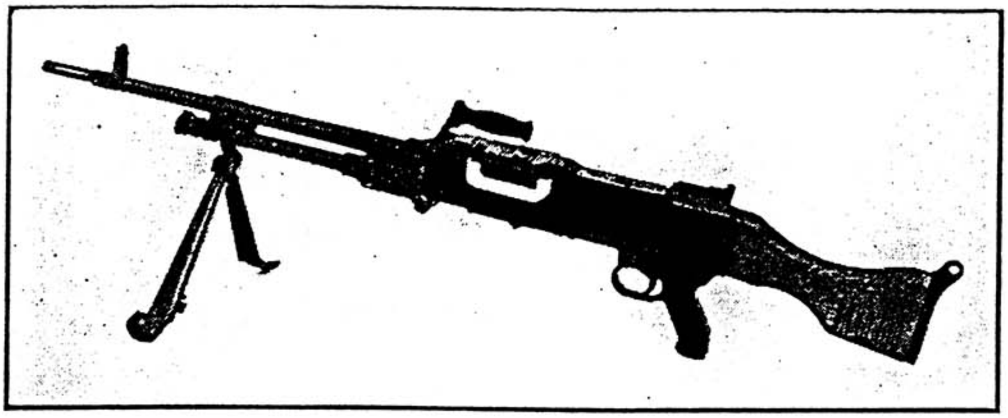


Fig. 2
The FN-M.A.G. on its bipod (left side)

102 GENERAL CHARACTERISTICS

The weapon, which is gas operated from a vent in the barrel, has a regulator based on the gas exhaust system.

The barrel can be removed and replaced with great rapidity, an advantage to troops in action. Barrel wear is also reduced to a minimum by chromium plating the bore throughout.

The gas regulator can be adjusted to enable the M.A.G. to function correctly with all reasonably made ammunition.

Gas regulation also makes it possible to vary the rate of fire within wide limits (between 650 and 1,000 rounds per minute) and provides the reserve of gas needed under adverse conditions.

Safety is ensured by positive locking of the breech block before the round is fired; the cap cannot be struck before locking is completed since the firing pin is integral with the breech block slide.

The gun is fed by metal link belts, composed of "C"-shaped links, so designed that the round can be fed down into the gun through the central aperture in the feed tray; this direct feed of the cartridge into the chamber avoids the complications of indirect methods of feed, used in older type machine guns.

The gun fires from an open breech, thus preventing any spontaneous explosion of a cartridge (cook off) after prolonged firing; this can happen with weapons firing from a closed breech after sustained high rates of fire.

The working parts of the gun are completely protected by the body of the weapon.

The ejection opening is protected by a cover, which can be closed during transport; movement of the piston, to the rear or forward, automatically opens the ejection cover.

Sights are as follows:—

— a foresight (mounted on the barrel), adjustable vertically and laterally

— a backsight, fixed to the rear of the body; graduations at intervals of 100 metres are marked from 200-800 metres on the upper surface of the leaf, and on the reverse face from 800 to 1,800 metres (with backsight raised in the vertical position).

Mounting points are provided in the body for fixing to a rest, or tripod.

"Coaxial" and "Aircraft" models: see page 71.

TECHNICAL DETAILS.
WEIGHTS AND MEASUREMENTS

Weight of weapon, with butt and bipod	approx. 11.000 kgs (24.2 lbs.)
Weight of barrel (with gas regulator, flash-hider and carrying handle)	approx. 3.000 kgs (6.6 lbs.)
Overall length of gun, with flash-hider	approx. 1,255 mm (49.4″)
Sight radius, with sight folded down	approx. 848 mm (33.4″)
Sight radius, with sight extended	approx. 785 mm (30.9″)
Length of barrel without flash-hider	approx. 545 mm (22.4″)
Rifling:	
Number of grooves (right-hand)	4
Pitch	1 in 305 mm (12″)
Sights:	
rear, aperture, graduated in steps of 100 m, folded down	200 to 800 m
graduated in steps of 100 m, extended	800 to 1,800 m
Cyclic rate of fire: adjustable between according to gas setting	650 and 1,000 rounds per minute
Limits of traverse (total):	
on bipod	approx. 50° (880 mils.)
on tripod	approx. 67° (1,200 mils.)

All the stripping and assembling operations described later can, except where indicated in the text, be carried out by the soldier himself, using the tools supplied with the gun.

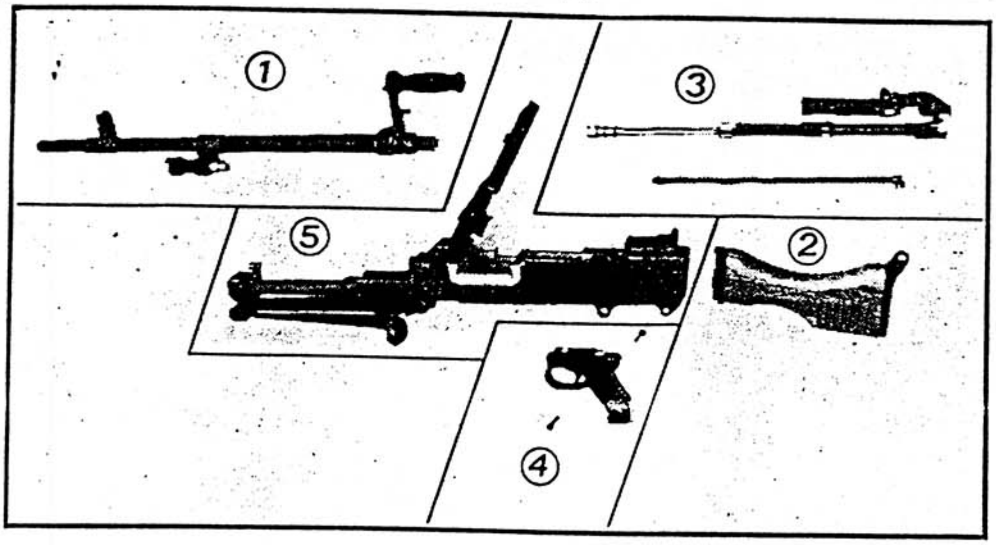


Fig. 3

Machine gun split into its principal assemblies

1. Barrel assembly, with gas regulator and carrying handle
2. Butt
3. Breech block mechanism, piston, and return spring assembly
4. Trigger assembly
5. Body with bipod and cover

Assembling is generally done in the opposite order to stripping. To make the user's task easier and to avoid mistakes, certain assembling operations are, however, described in detail: assembling the trigger group and replacing the barrel.

Before stripping

Open the feed mechanism cover (fig. 4) and release the ammunition belt from the gun. Press the trigger and bring the breech block mechanism and piston forward under control.

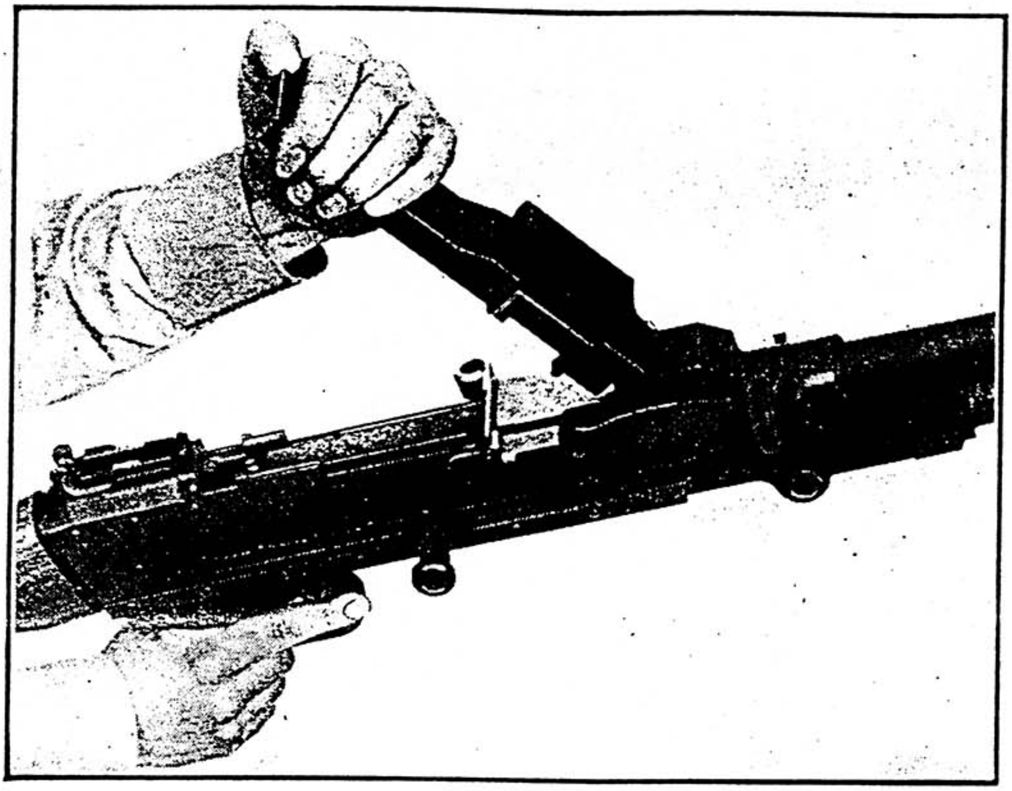


Fig. 4

301 *REMOVING AND REPLACING THE BARREL*

302 *TO REMOVE THE BARREL ASSEMBLY*

Make sure that the actuating catch of the carrying handle is engaged in the recess of the barrel locking nut; press on the head of the barrel locking catch (fig. 5, a), on the left side of the body, so that the barrel locking catch is disengaged from its recess in the barrel locking nut.

Turn the carrying handle towards the left (fig. 5, b) to bring it to the vertical position. Push forward and lift off the barrel assembly (fig. 5, c).

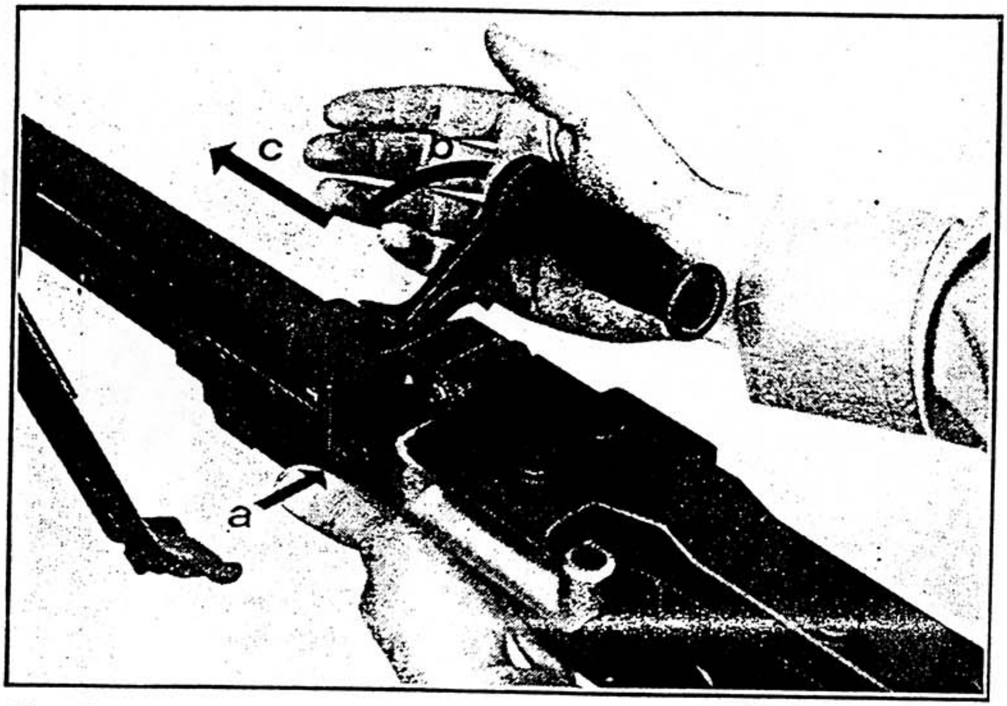


Fig. 5

303 TO REPLACE THE BARREL ASSEMBLY

Take hold of the barrel by the carrying handle, with the gas regulator turned downwards and the handle in the vertical position, i.e. in line with the foresight (fig. 6).

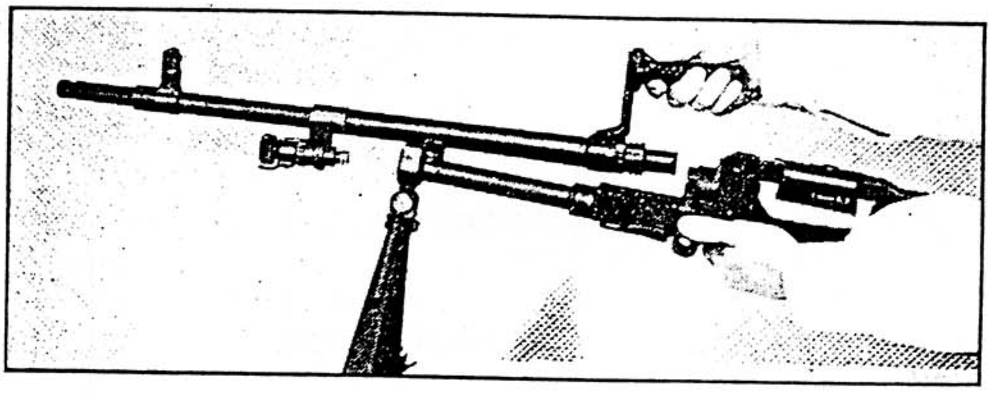


Fig. 6

Position the rear end of the barrel in the body so that the barrel is supported in the V formed by the fore part of

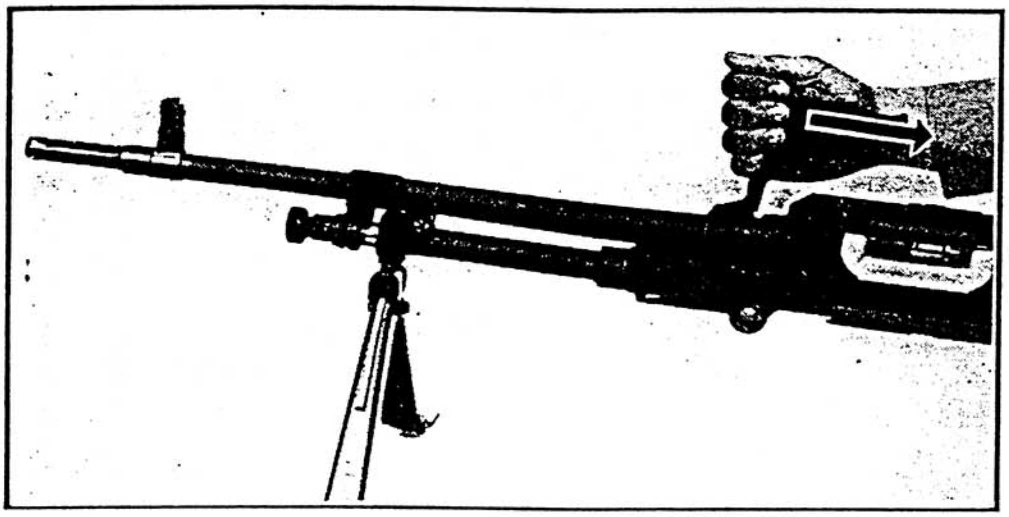


Fig. 7

the gas cylinder and rests on the flat of the fore end of the body; the gas regulator is thus guided into the gas cylinder.

Push the barrel fully home in the body (fig. 7), rotate the carrying handle completely to the right, the barrel is then secure.

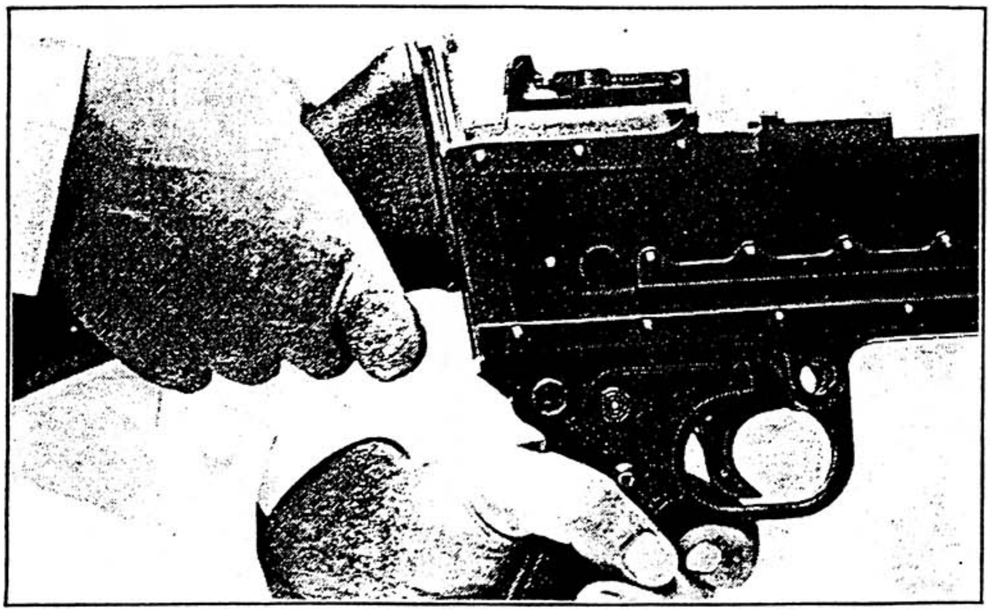


Fig. 8

304 REMOVING THE BUTT

Depress the butt catch and at the same time lift the butt upwards until it is clear of the gun (fig. 8).

305 REMOVING AND STRIPPING BREECH BLOCK MECHANISM AND PISTON

306 STRIPPING THE RETURN SPRING ASSEMBLY

— Push the rear end of the return spring rod forward and upward to disengage its lug from its seating in the body (fig. 9).

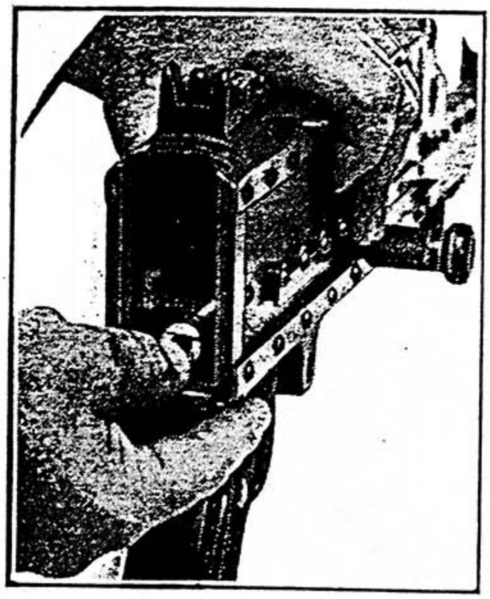


Fig. 9

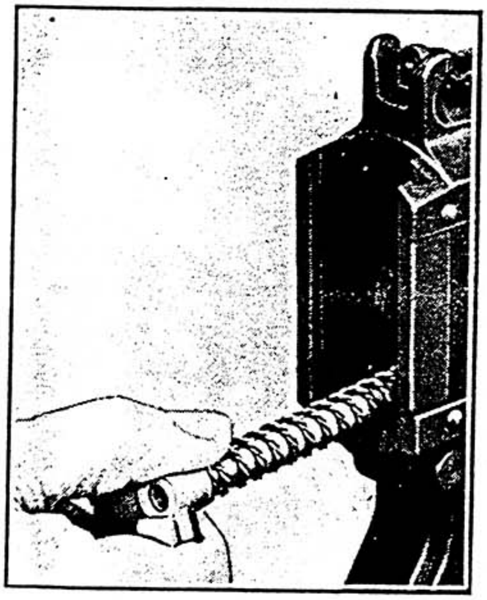


Fig. 10

— Withdraw the return spring assembly (fig. 10).

307 REMOVING BREECH BLOCK AND PISTON ASSEMBLY

- Pull the cocking handle rearward to move the breech block and piston assembly to the rear of the body.
- Withdraw the complete assembly (fig. 11).

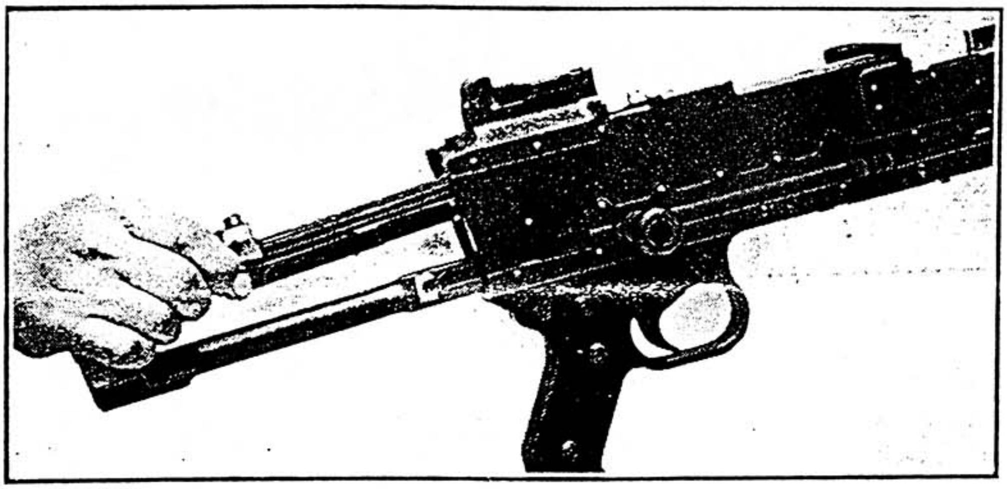


Fig. 11

N.B. When assembling, press the trigger as the assembly is inserted in the body; this brings down the sear and allows passage of the slide (piston extension).

308 REMOVAL OF BREECH BLOCK - LOCKING LEVER AND LINK ASSEMBLY

- To separate this assembly from the piston extension, push out the link axis pin from the piston extension post (fig. 12). Removal of the lower link axis pins, to separate the link from the breech block-locking lever assembly, must always be carried out by an armourer, who will take the necessary precautions when driving out the riveted pins.

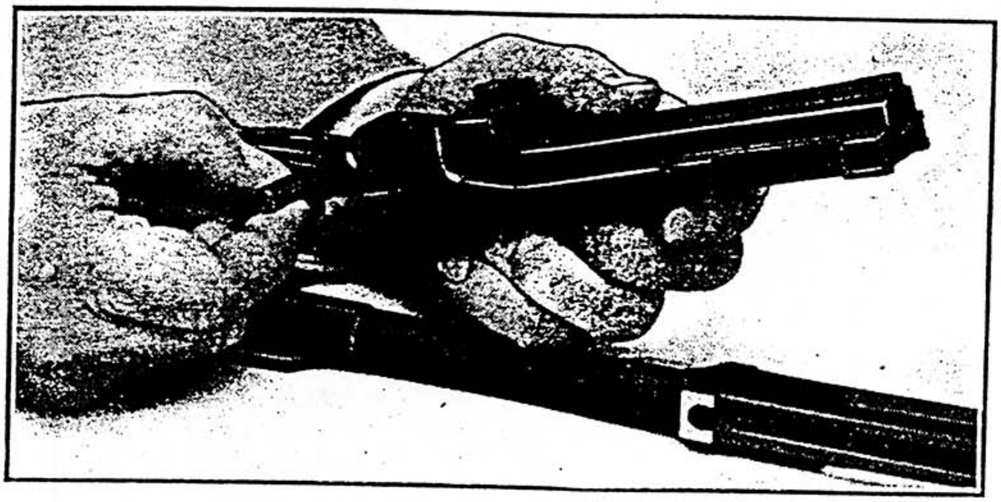


Fig. 12

N.B. The piston must never be separated from the slide (piston extension) except by an armourer.

In the same way, the breech block and locking lever cannot be separated.

In the event of its being necessary to remove the firing pin, first withdraw the retaining pin of the firing pin.

The bearing for the roller operating the feed arm, which is set in the roller itself, allowing it to rotate, must never be removed or replaced except by an armourer: this is only necessary in very exceptional cases.

309 STRIPPING THE EXTRACTOR

— To strip the extractor use the special extractor removing tool OREA. Insert one of the hooks of this tool in the slot in the extrator stay (fig. 13, A).

Hold the tool in position and engage the hook at the other end of the tool in the slot in the locking lever (fig. 13, B); while this is being done the locking lever should be kept inclined in relation to the breech block (fig. 13).

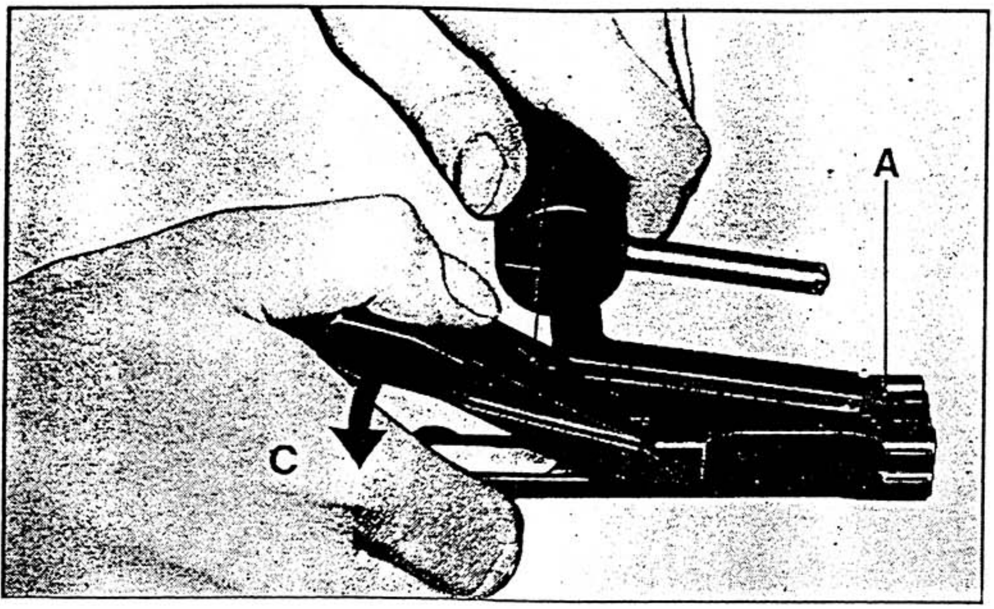


Fig. 13

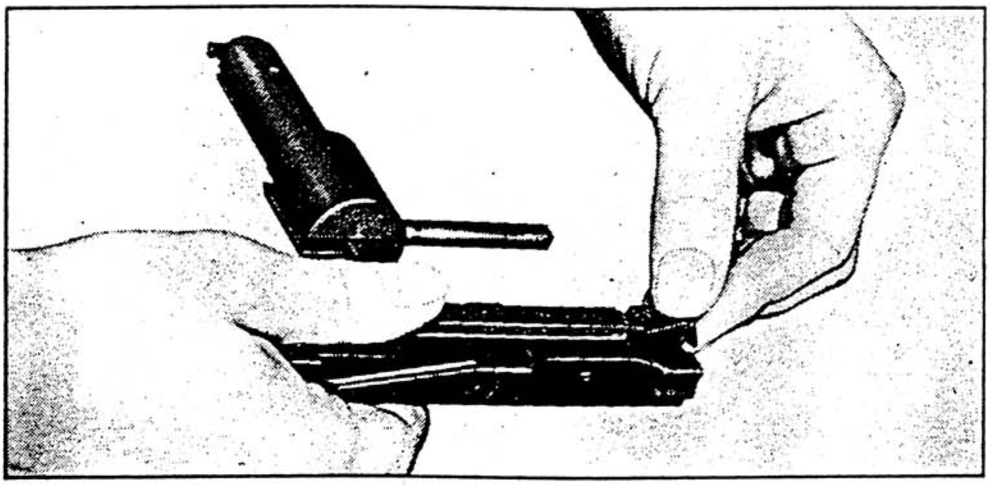


Fig. 14

Apply a strong pressure to the locking lever (fig. 13, C) until it is brought against the breech block, at the same time keeping a firm hold on the tool.
This compresses the extractor spring and the extractor can be withdrawn (fig. 14).
Let the locking lever return to the inclined position and the extractor stay rod and spring can then be withdrawn.

310 REMOVING, STRIPPING AND ASSEMBLING THE TRIGGER ASSEMBLY

311 REMOVING THE TRIGGER ASSEMBLY

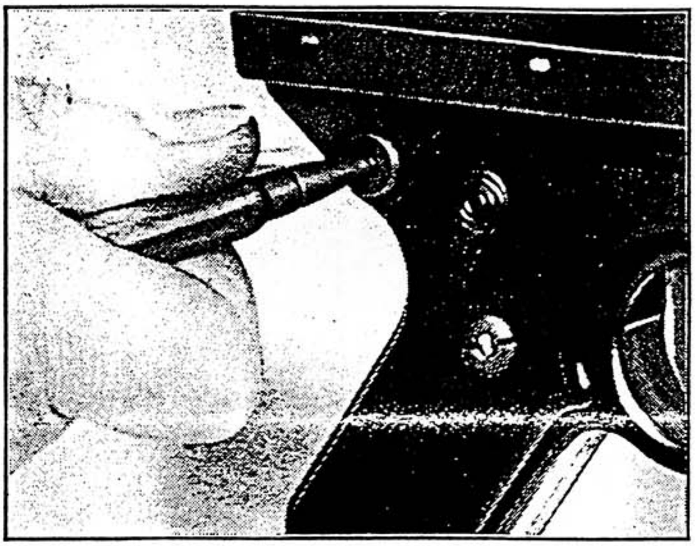


Fig. 15

— Push out the trigger retaining pin (fig. 15).

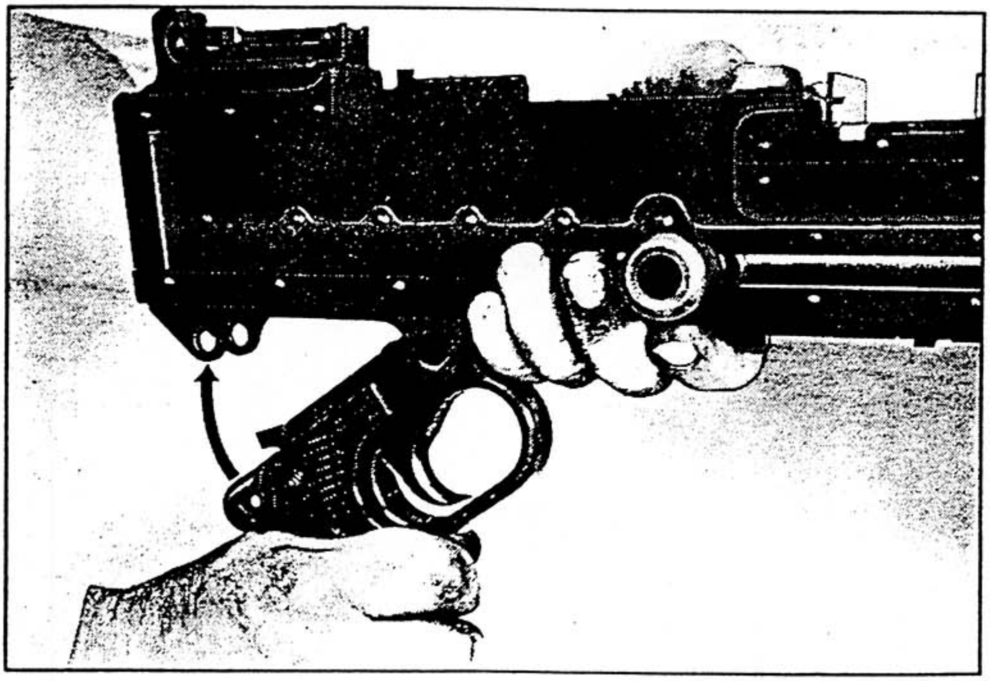


Fig. 16

- Remove the joint pin.
- Remove the assembly downward from the body (fig. 16) by the grip.

312 *STRIPPING THE TRIGGER MECHANISM*

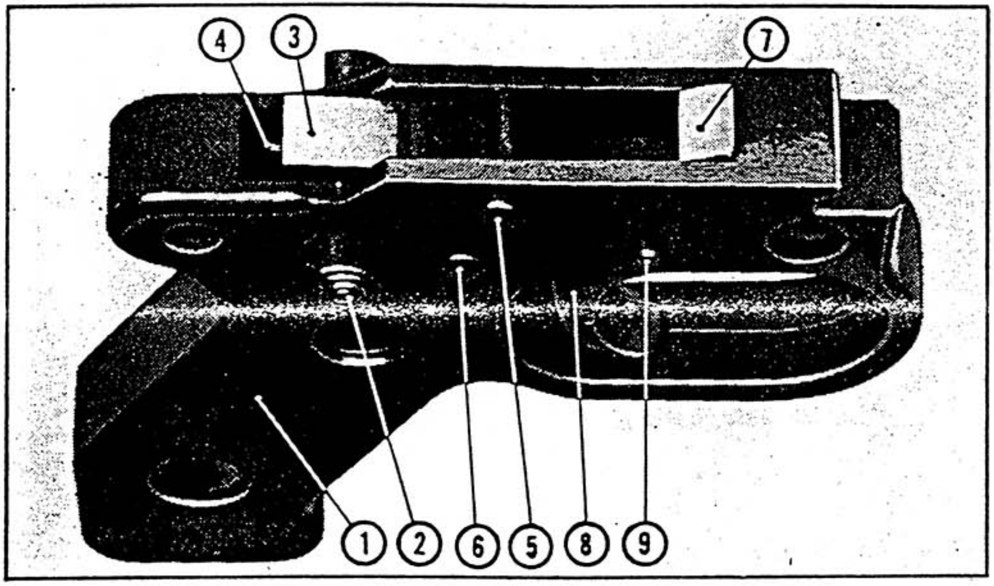


Fig. 17

1. Trigger frame	6. Pin, sear spring
2. Safety catch	7. Sear tripper
3. Sear	8. Trigger
4. Trigger and sear spring	9. Trigger pin
5. Sear pin	

- Set the safety catch to "F" (fire).
- Take out the screws of the trigger grip plates, remove the plates.
- Press firmly on the sear tripper to free it from the sear.
- Turn the safety catch clockwise so that the safety stud is placed facing the notch made in the lefthand side of the trigger-guard (in this position the flat parts which carry the letters "F" and "S" are turned downwards).

— Withdraw the safety catch towards the left.

— Take out the sear pin and trigger pin.

— Remove the sear tripper, the trigger and the sear. *N.B.* The trigger and the sear tripper are joined together by an axis pin, this pin should never be removed, *except by an armourer,* and then only in exceptional cases.

— Remove the pin for the sear and trigger spring and then withdrawn the spring.

313 ASSEMBLING THE TRIGGER MECHANISM

— Replace the sear and trigger spring in the trigger frame and locate with its pin. When replacing this spring, take special care to see that, *without exerting undue pressure,* one of its arms is located vertically in relation to the trigger frame, while the other is positioned in the trigger opening.

— Insert the fore end of the sear in the lower notch of the sear tripper.

— Replace the assembly of trigger - sear tripper - sear in the trigger guard.

— Replace the trigger pin.

— Replace the sear pin.

— Exert pressure towards the rear on the sear tripper so that the sear is released.

— Replace the safety catch from the left, with the end bearing the letter "S" in front.

— Push the safety catch well home so that the left side of the trigger frame is between the safety stud on the catch and the index stud.

— Turn the safety catch anti-clockwise, until the flat portions of the ends are turned towards the rear (in this position the letters "F" and "S" can be read from behind).

— Replace the plates and secure with their screws.

314 REMOVING THE COVER

— To remove the cover, release the safety ring holding the nut for the bolt which secures cover and feed tray, remove the nut from the bolt and the bolt from the body.

The cover (fig. 18) and the feed tray are then freed, as they pivot on the same bolt.

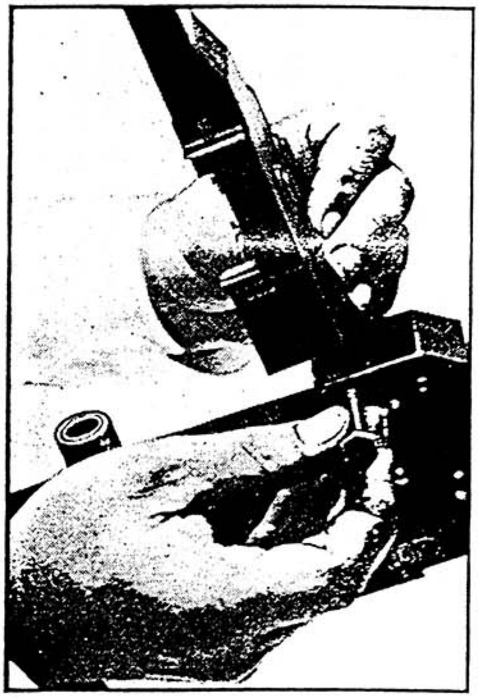


Fig. 18

315 STRIPPING THE FEED MECHANISM

— Press the end of the feed arm, pushing towards the right (fig. 19, a), until the inner feed pawl slides from its position and the cartridge guide pawl is disengaged; at the same time press upward on the cartridge guide pawl (fig. 19, b) to counteract the pressure of its control spring and make the cartridge guide pawl come away from its housing in the cover. Under the action of its retaining spring, the cartridge guide pawl then occupies a position perpendicular to the cover.

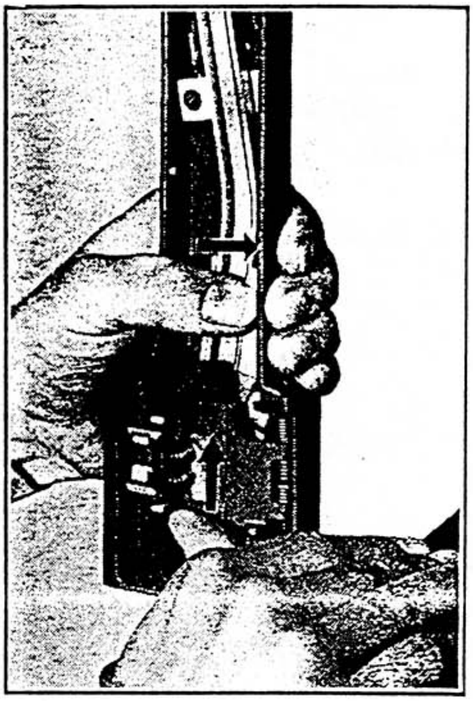


Fig. 19

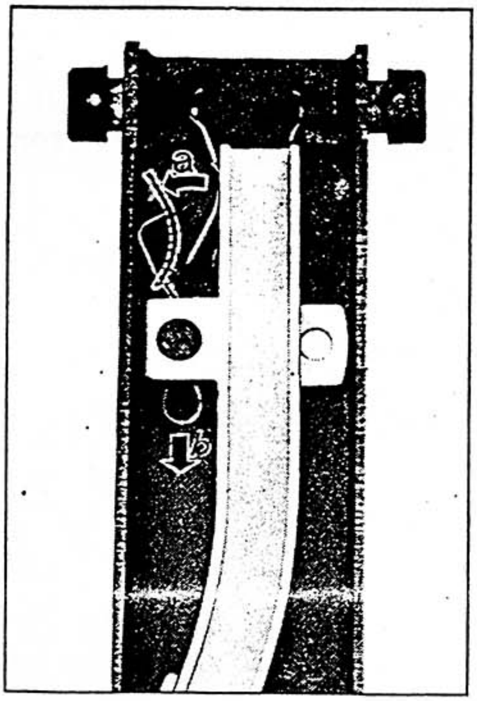


Fig. 20

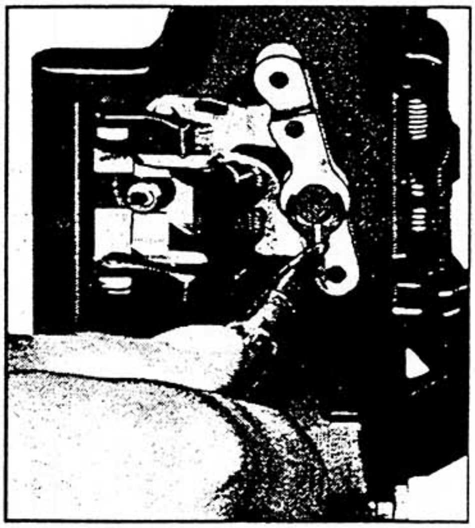


Fig. 21

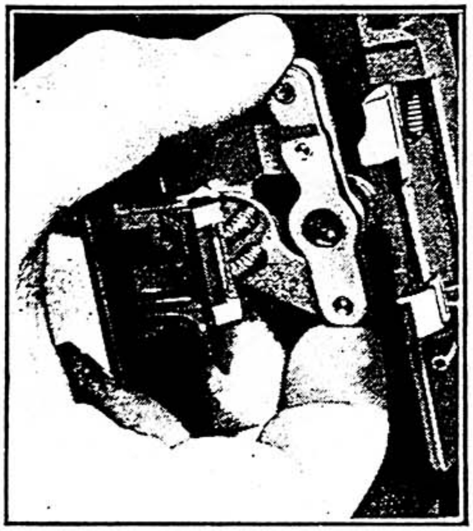


Fig. 22

- Hook the right arm of the feed arm control spring behind the curved part of the other end of this spring (fig. 20, a).

- With the nose of a cartridge, or the point of a tool, inserted in the visible loop of the clip securing (fig. 20, b), pull it from cannelure of the pivot.
- Remove the feed arm.
- Remove the clip (fig. 21).
- Strip the pawl assembly (fig. 22).

316 REMOVING THE GAS REGULATOR

- Completely unscrew the gas regulator sleeve (fig. 23, a), forcing the indicator (fig. 23, c) to override its stop.

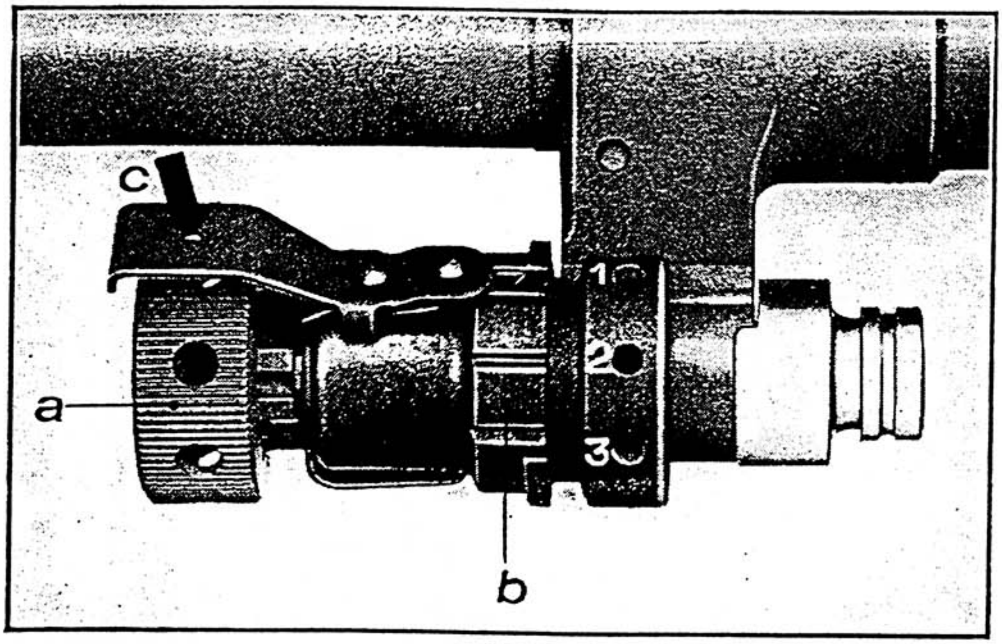


Fig. 23

- After removing the gas regulator, take off the split collar which holds the gas plug stationary (fig. 24, a).
- Push the gas plug to the rear and withdraw (fig. 24, b). The gas regulator assembly should never be completely stripped, except by an armourer.

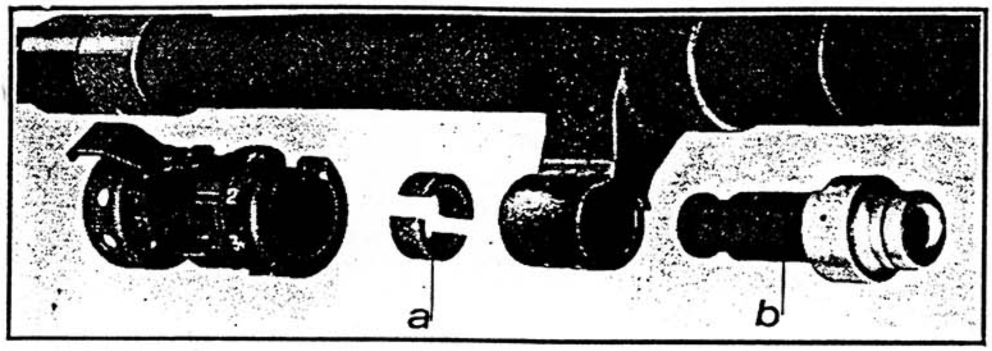


Fig. 24

317 MOUNTING THE BLANK FIRING DEVICE

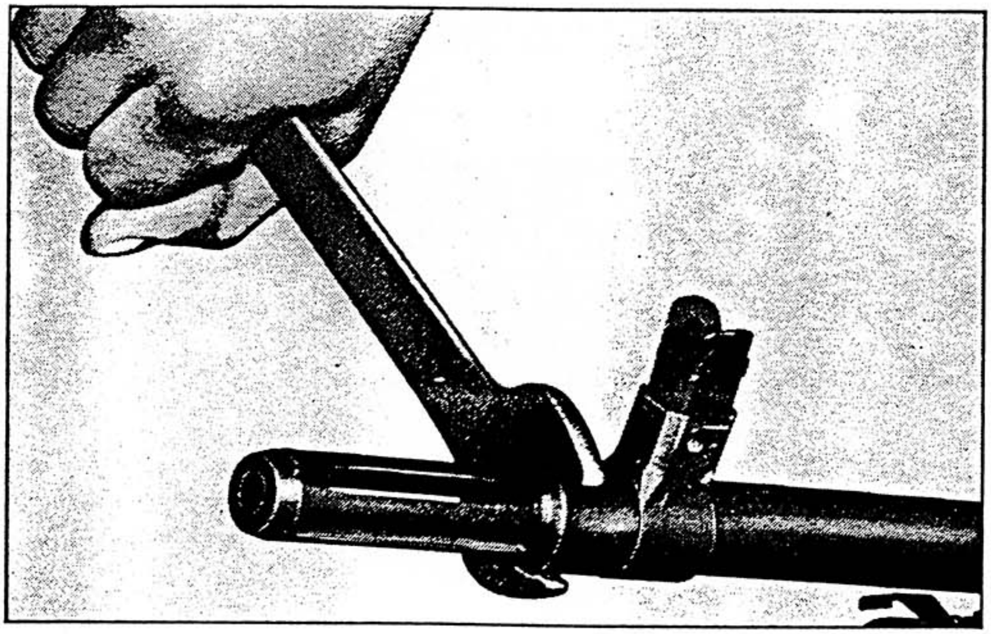


Fig. 25

- Unscrew the flash-hider (fig. 25) and replace by the blank firing device (fig. 26).

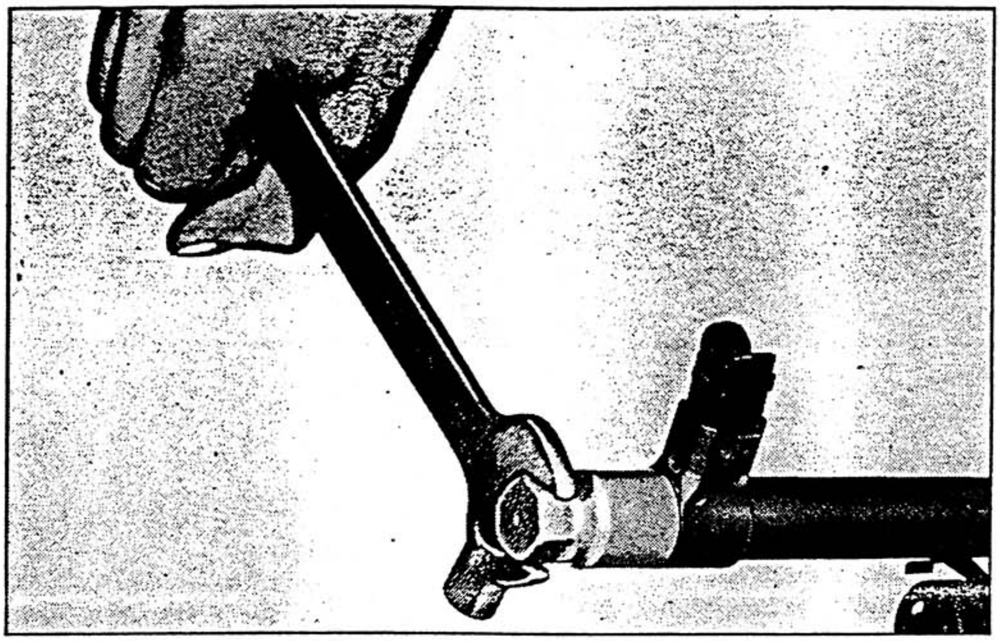


Fig. 26

401 *STARTING POINT*

- The mechanism is held to the rear by the sear.
- The belt has been inserted (first round in the cartridge way) and the cover closed.

402 *FIRING CYCLE*

1. *Forward action*

- Pressure on the trigger lowers the sear.
- The compressed return spring forces the breech block mechanism forward.
- The feed horns of the breech block come into contact with the base of the first cartridge and push it towards the chamber (fig. 27, a).
- The concave part of the locking lever then contacts the ends of the main front guides on the sides of the body, thus causing the downward deflection of the locking lever (fig. 27, b).
- Continuing its forward movement, the breech block chambers the round. When the round is fully chambered, the extractor rides its rim and allows the base of the cartridge to position itself on the cartridge face of the breech block.
- The breech block itself stops when the round is fully chambered and its base housed on the cartridge face.
- During this time, the piston extension continues its forward movement and, due to the articulated action of its link, accelerates the downward swing of the locking lever, the locking face of which takes up its position in front of the locking shoulder. The breech is now locked (fig. 27, c).
- The piston extension continues its forward movement for a short distance, ensuring that the breech is fully

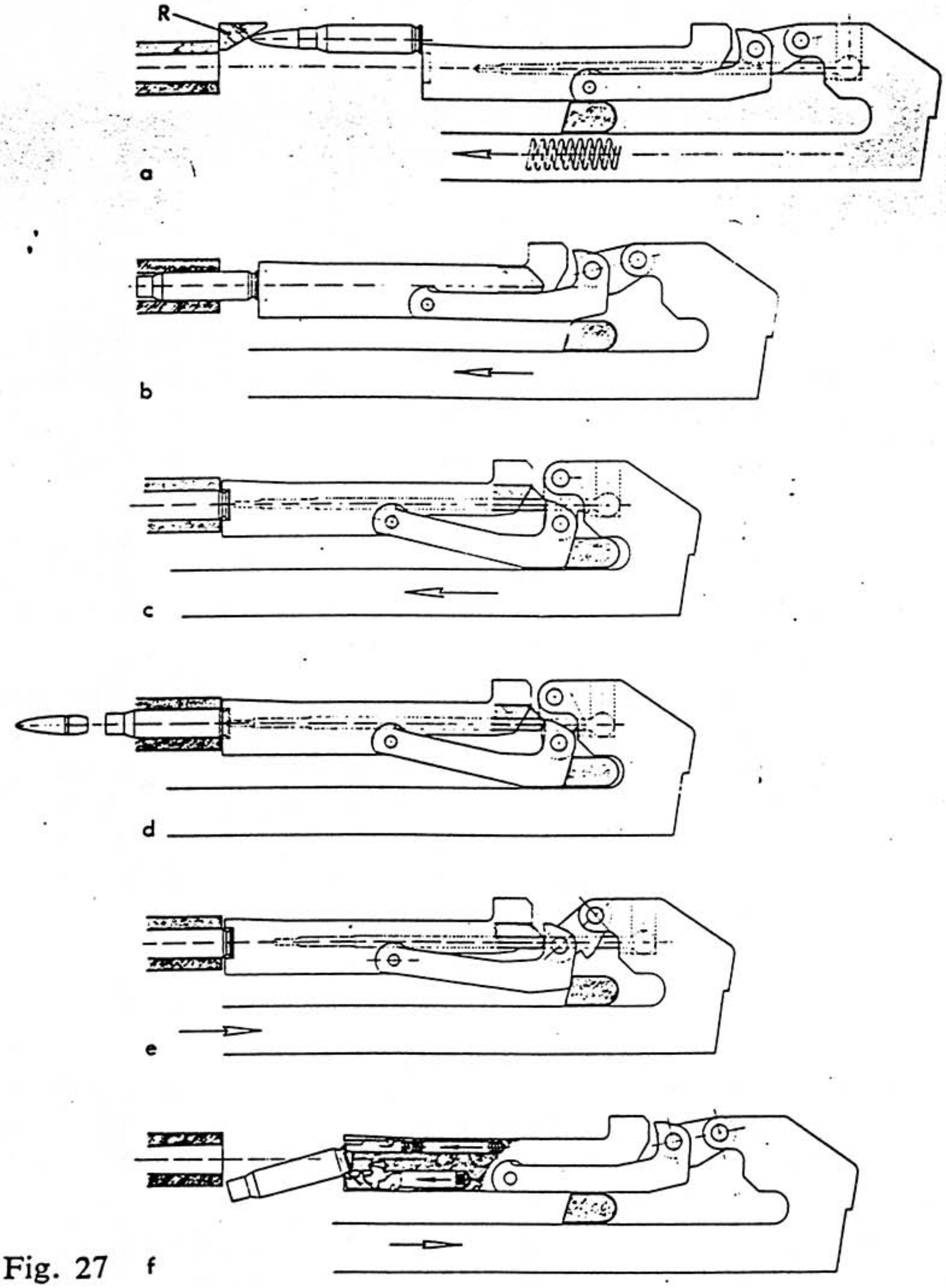


Fig. 27

locked and causing the firing pin to protrude through the breech block and strike the cartridge cap (fig. 27, d).

— Thus firing of the round can only take place after locking of the breech.

— Forward movement of the piston extension is stopped when its shoulder strikes the stop face of the gas cylinder.

2. *Backward action*

— After the shot has been fired, as the bullet passes the gas vent in the barrel, some of the propellant gas passes through this vent into the gas regulator and thence into the gas cylinder. The piston and the piston extension assembly are thus driven backwards.

— As the backward movement commences, the piston extension causes withdrawal of the firing pin and causes the link, holding both piston extension and locking lever together, to pivot upwards (fig. 27, e).

— The link, acting on the locking lever, lifts the latter against the ends (cams) of the main front guides of the breech block and forces the locking lever to rise; the cams exert a backward leverage, which causes a relatively slow and progressive movement of the breech block, which ensures that the extractor withdraws the spent cartridge case from the chamber.

— This is what is known as primary extraction; this gives a weapon a particularly smooth and effortless functioning.

— Further backward movement of the piston causes the rear part of the locking lever to rise until it is completely disengaged from its locking shoulder: the breech is thus unlocked.

— The locking lever can then travel freely to the rear pulling the breech block with it, completing extraction of the fired case; the latter is then tipped downwards and out through the ejection slot by the spring-loaded ejector housed in the breech block (fig. 27, f).

— As the recoiling portions continue their backward movement, the return spring is compressed.

At the end of this movement, the rear face of the piston extension strikes the buffer plate, housed in the buffer block.

If the firer has released his pressure on the trigger, the piston extension is caught up behind the sear and the mechanism remains in the open position. If not, forward action then recommences as described at 1 above.

403 FEED MECHANISM

Starting point

— The breech block mechanism is in the "cocked" position

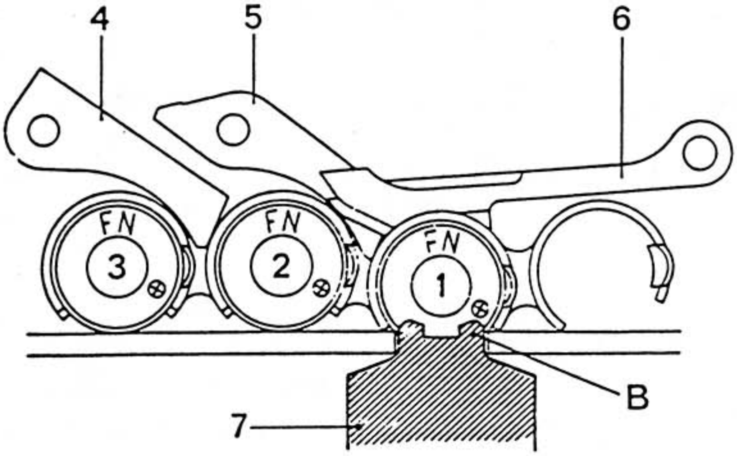


Fig. 28

1. First cartridge	5. Inner feed pawl
2. Second cartridge	6. Cartridge guide pawl
3. Third cartridge	7. Breech block
4. Rear feed pawl	

— A belt of cartridges is inserted, with the leading round in the cartridge way of the feed tray; the base of this cartridge is facing the feed horns of the breech block (figs. 28 and 30).

Feed

Feed takes place in two phases, ensuring that half the transverse movement of the belt takes place during the forward action of the moving parts and the other half during their backward action.

1. *First phase*
   During the forward action of the mechanism:

- When the breech block moves forward, the feed roller (A, fig. 30), which is fitted on top of the breech block, moves in the straight part of the feed channel and the feed pawls remain stationary. During this movement, the feed horns (B, figs. 28 and 29) of the breech block push on the base of the first cartridge, force it out of the belt and into the chamber guided by the sloping face of the bullet guide (fig. 27, a).
- During the second half of the forward movement, the feed roller moving in the feed channel reaches the bend in this channel (G, fig. 30), making it turn on its axis (C, fig. 30) and thus moving its front end (D, fig. 30) to the right.
- The movement actuates the feed link, which causes the upper feed slide to move to the right, taking the front and rear feed pawls with it, and the lower feed slide, on which the inner feed pawl is mounted, moves to the left
- In its movement to the right, the upper feed slide, through the front and rear feed pawls, exerts pressure on the next cartridge and forces it to move transversely to the right until it is in contact with the sloping face (F, fig. 29) of the cartridge guide pawl.
- In its movement to the left, the lower feed slide takes the inner feed pawl which, with springs compressed, rides over the second cartridge (figs. 29 and 32), and is and forces it to move cross-wise towards the right, engage behind this cartridge.
- At this moment, all three pawls are engaged behind the

second cartridge and the forward movement is completed.

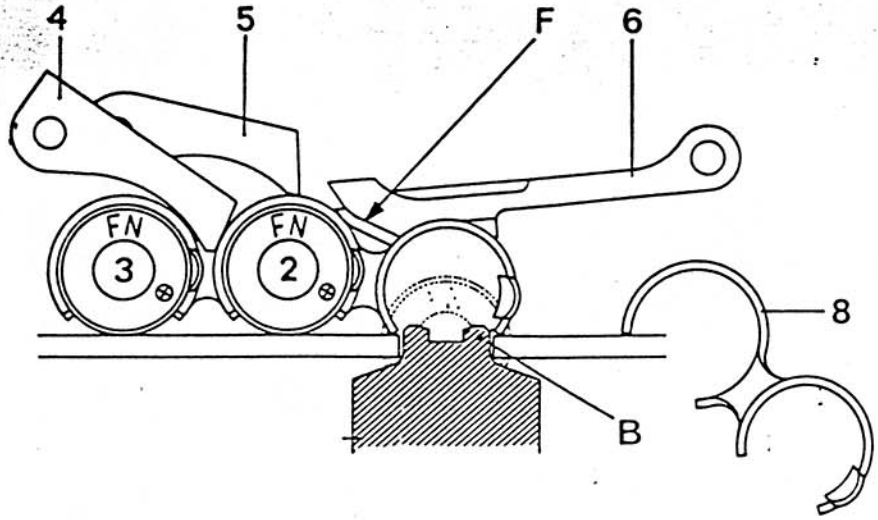


Fig. 29

2. Second cartridge
3. Third cartridge
4. Rear feed pawl
5. Inner feed pawl
6. Cartridge guide pawl
8. Ejected link

2. *Second phase*

— After the first shot is fired, the moving parts and consequently the breech block with the feed roller (A, fig. 31) are projected to the rear in a straight line movement.

— During the first half of its rear movement, the feed roller (A, fig. 31) as it moves in the feed channel, actuates the oblique and curved part of the channel (H), making it turn on its axis (C), thus displacing its front end (D) towards the left.

— Movement to the left of the front end of the feed channel transmits motion to the feed link, which causes the upper feed slide, bearing the front and rear pawls, to move to the left, and the lower feed slide, with the inner pawl (fig. 31), to move to the right.

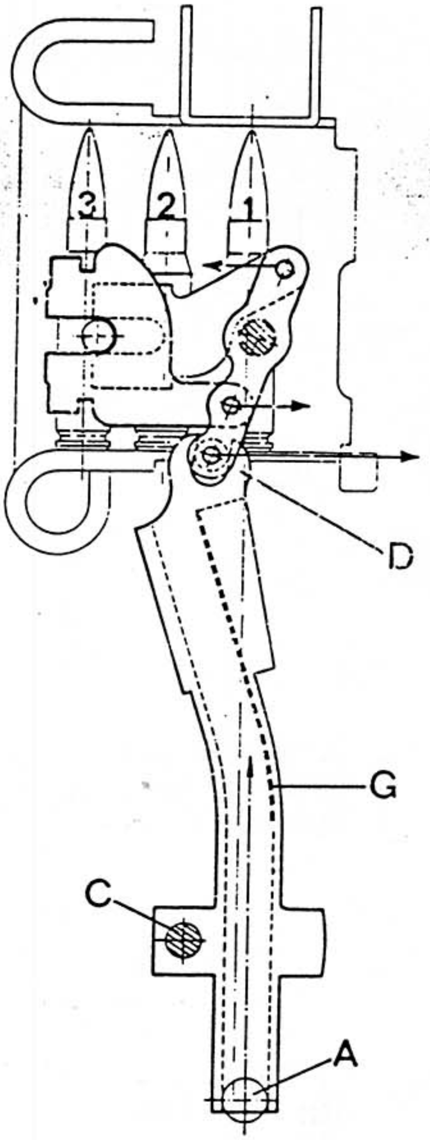


Fig. 30

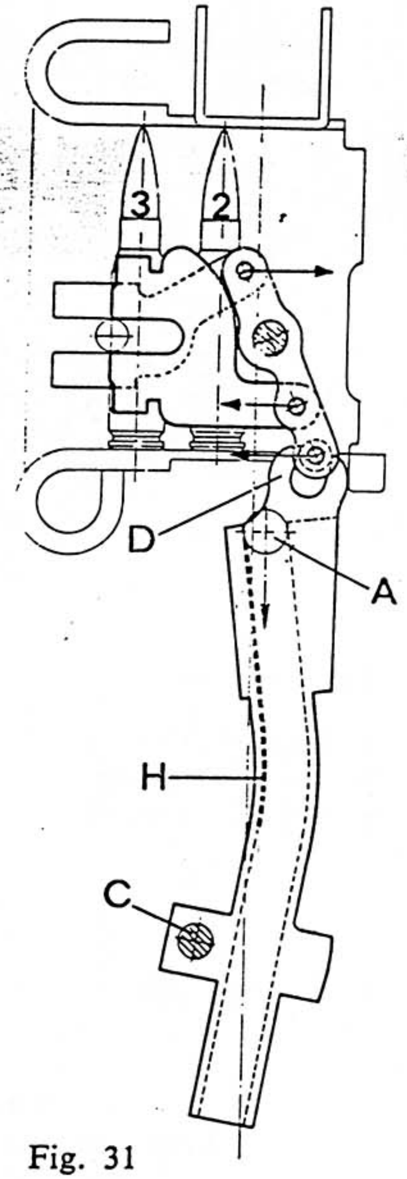


Fig. 31

— As the lower feed slide moves to the right, it exerts pressure on the second cartridge through the inner feed pawl and forces it to move cross-wise towards the right, on the top of the breech block. As it moves to the right, the cartridge forces the cartridge guide pawl to rise and comes into position beneath this pawl (figs. 33 and 34).

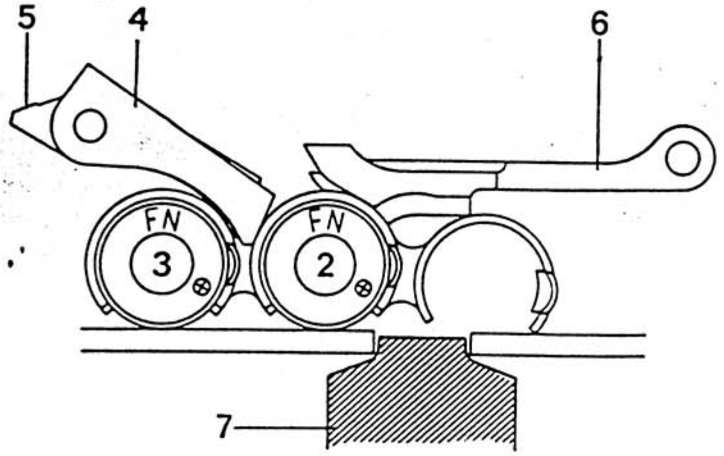


Fig. 32

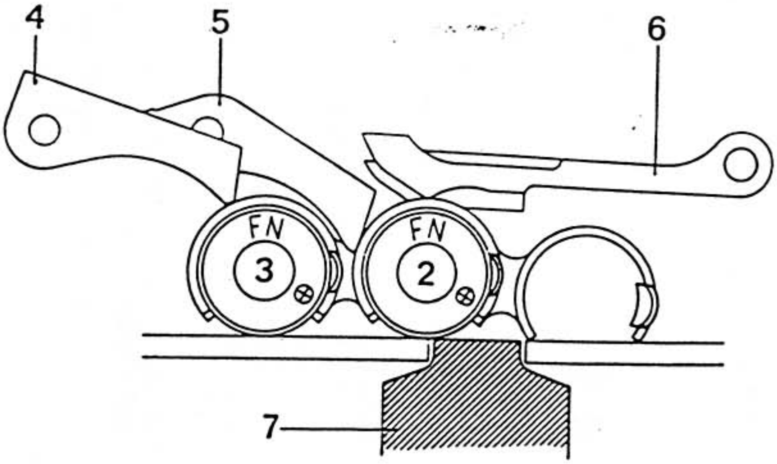


Fig. 33

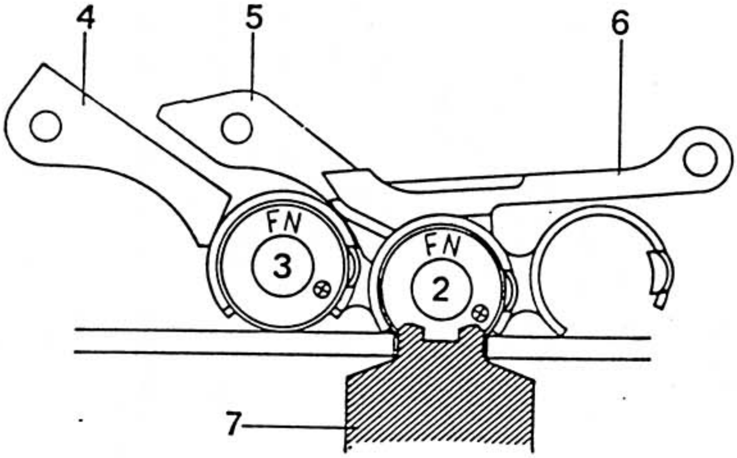


Fig. 34

2. Second cartridge
3. Third cartridge
4. Rear feed pawl
5. Inner feed pawl
6. Cartridge guide pawl
7. Breech block

- As the upper feed slide moves to the left, with the front and rear feed pawls, these ride over the third cartridge; this cartridge is itself taken to the left as it is connected to the second cartridge by the link.
- The feed pawls will position themselves behind the third cartridge (fig. 34) ready to recommence their cycle.
- During the second half of the backward action of the breech block, the feed roller will move in the straight part of the feed channel thus transmitting no movement to the feed pawls.
- Complete recoil of the breech block will clear the opening in the feed tray and therefore allow the second cartridge, under pressure of the cartridge guide pawl, to take up its final position, ready to be fed by the breech block when the forward movement takes place (fig. 34).

404 GAS REGULATOR (fig. 35)

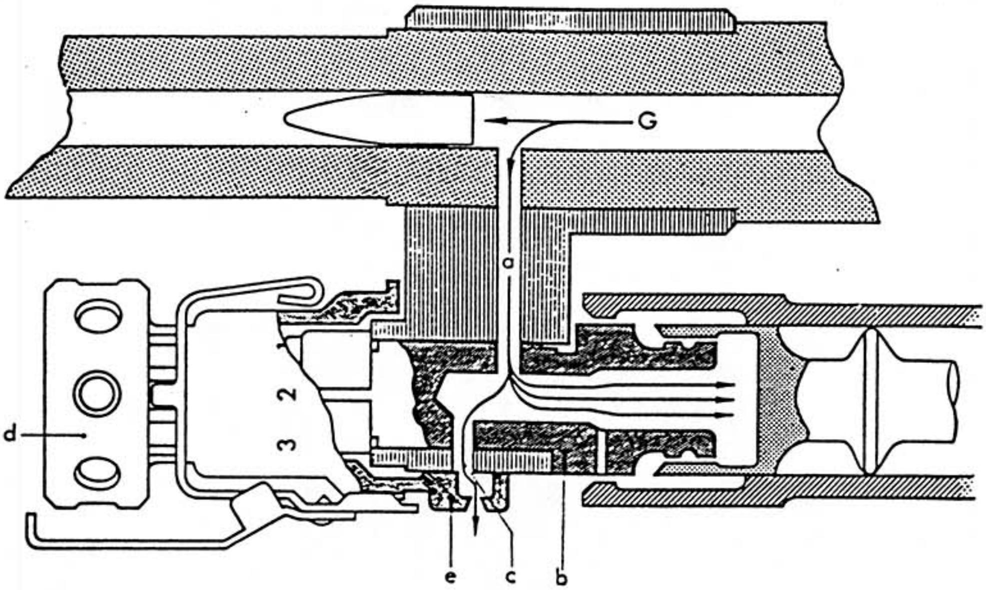


Fig. 35

Part of the propellant gas (G) follows the bullet as it leaves the barrel, whilst part is taken in through hole (a) in the gas block. This gas goes through the vent in the barrel into the gas regulator assembly (b). The gas plug is drilled with three gas escape holes (c).

When the regulator knob (d) is turned, the gas regulator sleeve slides along the gas block (e), thus varying the area of the three escape ports in the gas block, corresponding with the three gas holes in the plug. In this way it is possible to control the amount of gas admitted to act on the piston.

When the gas regulator sleeve is screwed home, it completely closes the three gas escape holes (position "maximum"), and the quantity of gas which strikes the piston head, and works the mechanism, is at its maximum. The rate of fire is then also at maximum. When the gas regulator knob (d) is unscrewed, the sleeve progressively uncovers the three gas escape holes mentioned above, the amount of gas escaping into the atmosphere increases and the amount available to operate the piston decreases.

The lowest rate of fire is obtained when the position "1" is registered on the gas indicator.

405 TRIGGER MECHANISM

This is designed to ensure:

- A position of mechanical safety when the safety catch is pushed to the right.
- A position of automatic fire when the safety catch is pushed to the left.
- It has a device for preventing the weapon from being set at safe when the mechanism is forward in the uncocked position.

406 TRIGGER AND SAFETY MECHANISM

Figure 36 shows the trigger mechanism cocked, with the safety catch set at "S" (Safe). In this position, the safety catch engages against the heel (t) of the sear, holding its rear bent (a) projecting above the body.

In this way the sear locks and holds the piston extension in the rear position, even if the trigger is pressed.

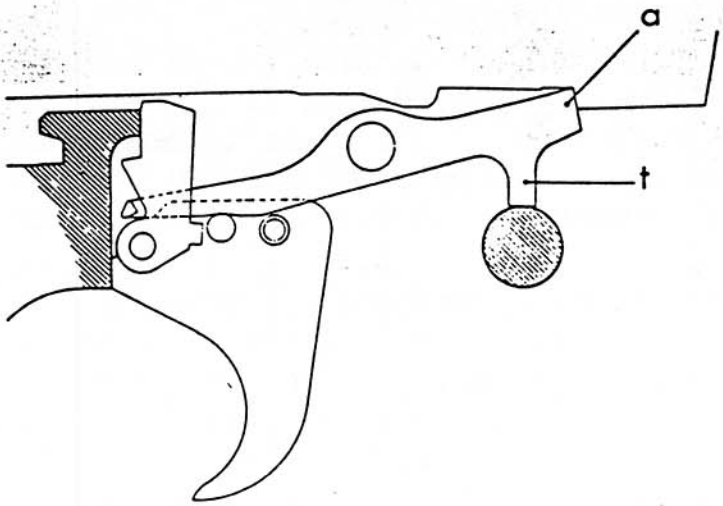


Fig. 36

Figure 37 shows the mechanism cocked, with the piston extension to the rear and safety catch in position "F" (Fire).

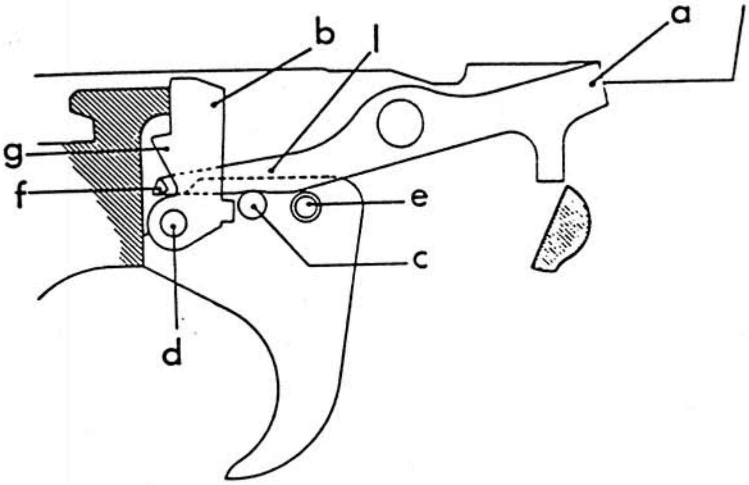


Fig. 37

The lever tripping (b) and the rear bent (a) of the sear project into the body.

When the trigger is pressed, it rotates on its axis pin (c) and the lever tripping (b) descends. The trigger roller (e) rises and comes into contact with the underside of the front arm (l) of the sear.

This arm is pushed upwards and rotates the sear so that the rear bent (a) of the sear is lowered, whilst the lever tripping (b) descends and is pulled rearwards. This backward movement is obtained by the two pinions (f) of the sear acting on the inclined face (g) of the lever tripping.

After passing the top of this inclined face, the lever tripping is pushed forward by the lever tripping spring and its nose (i) comes into position under the two pinions (f) of the sear.

As long as there is pressure on the trigger, the lever tripping is held in the low position, as well as the rear bent (a) of the sear, the heel (t) of which has gone into the notch (k) of the safety catch: the piston extension can therefore move and the weapon fire automatically (fig. 38).

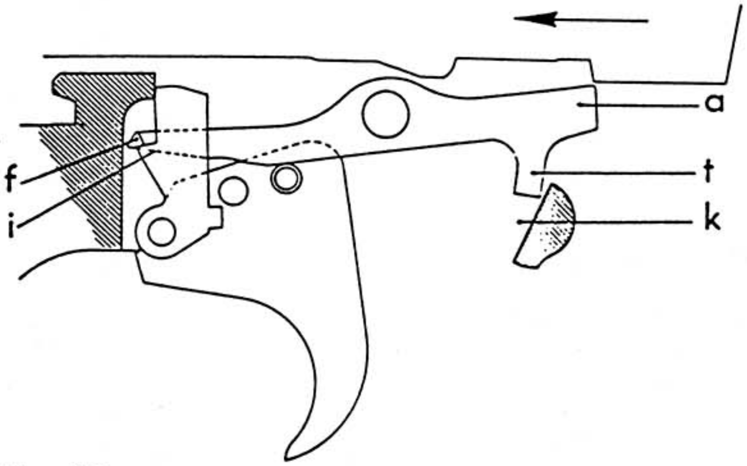


Fig. 38

When the trigger is released (fig. 39), its front end rises, taking with it the lever tripping (b) as well as the front arm (l) of the sear; as a result of this, the rear bent (a) of the sear is lowered.

The lever tripping (b) rises and projects into the piston extension runway (m).

When the piston extension recoils (fig. 40), its heel swings the lever tripping (b) to the rear. The lever tripping is freed from the front end of the sear and the sear spring pushes its rear bent (a) upwards, thus making it project into the body.

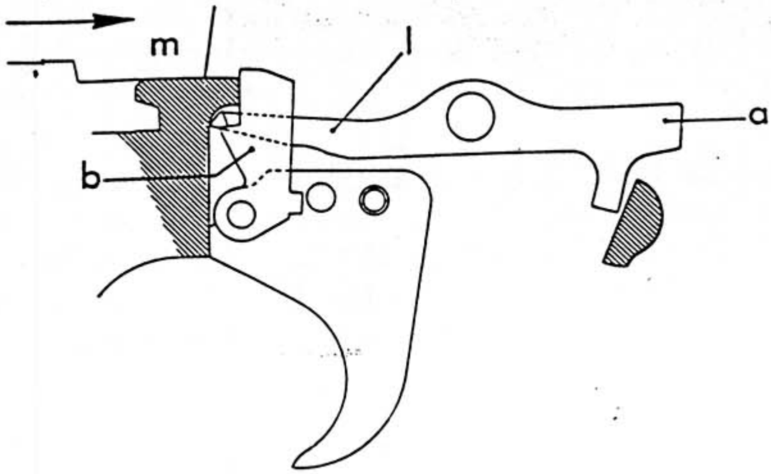


Fig. 39

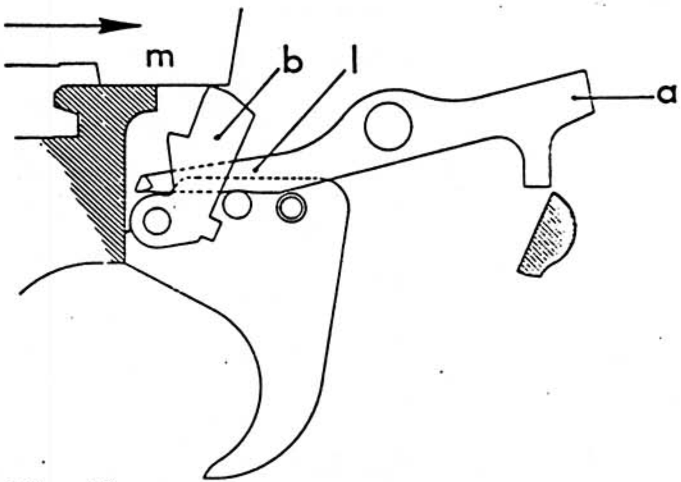


Fig. 40

The bent (a) of the sear will hold the piston extension to the rear in the "cocked" position, by engaging with the recess formed in the latter for this purpose, while the spring-loaded lever tripping takes up its original position (fig. 37).

407 ROLE OF THE LEVER TRIPPING

The rôle of the lever tripping is to protect the sear against the shock caused by movement of the piston extension and to make it impossible to put the gun at safe, when it is not cocked.

— Whatever action there is on the trigger during firing, the lever tripping keeps the sear bent in the low position, thus preventing its deterioration by the action of the piston extension.

— When the mechanism is forward and the trigger is released, the lever tripping keeps the bent of the sear in the low position, preventing the gun from being set at safe when the heel of the sear is engaged in the recess in the body of the safety catch; this device prevents the sear from being damaged if the firer inadvertently tries to cock the mechanism when the gun is at safe.

408 BUFFER RECOIL

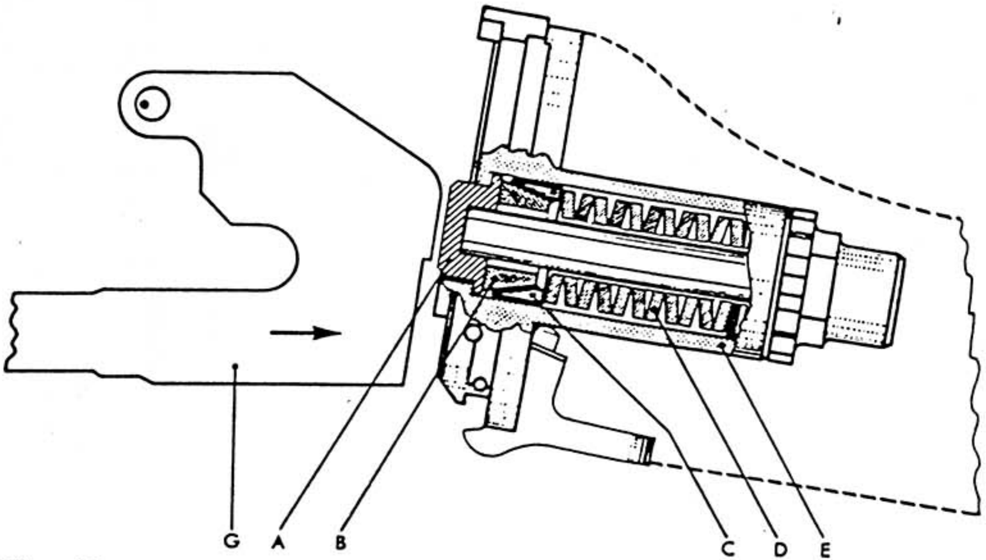


Fig. 41

— At the end of its backward movement, the piston extension (G) strikes the buffer bush (A) housed in the buffer block and forces it to recoil slightly (fig. 41).

— The buffer bush (A) transfers its movement to a braking cone (B), which penetrates a braking ring (C), making it open slightly.

— As it expands, the braking ring (C) contacts the wall of the buffer cylinder (E) and thus exerts a braking action which, combined with the compression of the Belleville spring washers (D), absorbs a considerable amount of the recoil shock.

— After the Belleville washers (D) have been compressed by the recoil as the piston extension strikes the buffer plate, they return to their original position under their spring effect and again push forward the braking ring (C), the cone (B) and the buffer bush (A), thus restoring the whole assembly to its former position.

500 GUN OPERATION, ADJUSTMENT OF BIPOD AND GAS REGULATION

501 OPERATING THE GUN

502 TO COMMENCE FIRING

- Cock the gun, pulling the cocking handle fully to the rear.
- Put the gun at safe by bringing the safety catch completely to the right (fig. 42) so that the letter "S" is visible on the right side of the gun (the safety catch cannot be applied when the mechanism is in the forward position).

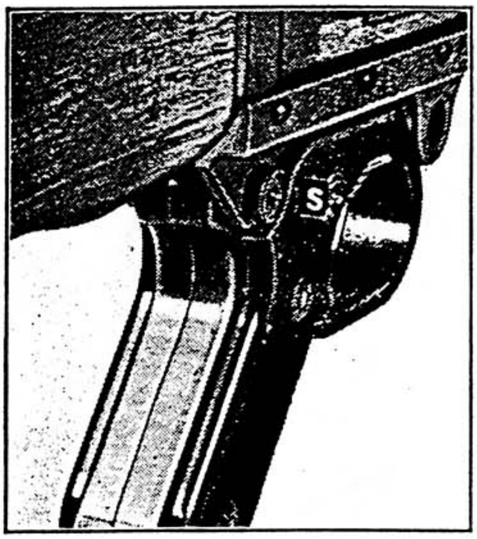


Fig. 42

- Open the cover of the gun by pressing the cover catches.
- Place the loaded belt in the cartridge way so that the leading cartridge is in contact with the cartridge stop, on the righthand side of the feed tray (figs. 43-44).

N.B. The leading link of the belt has no cartridge.

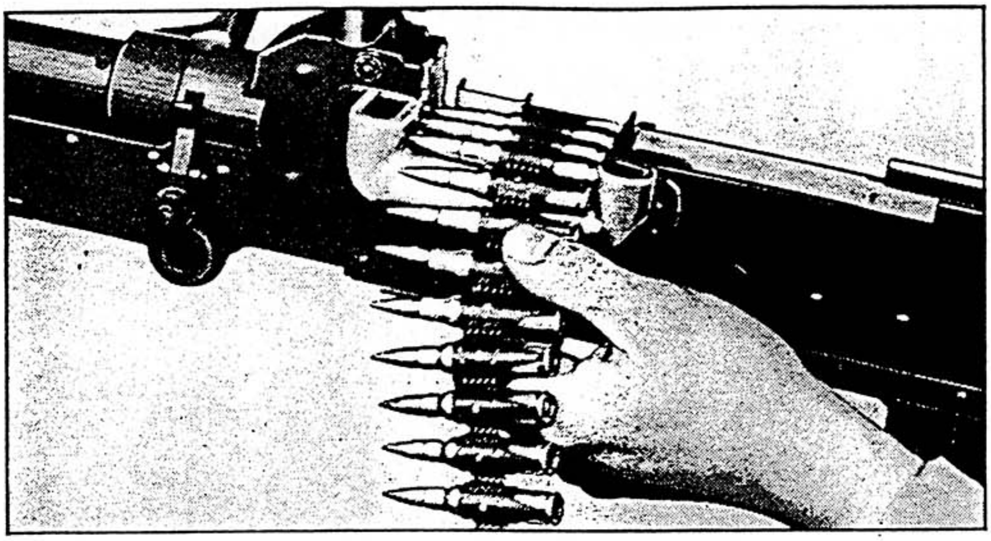


Fig. 43
Positioning the articulated link belt

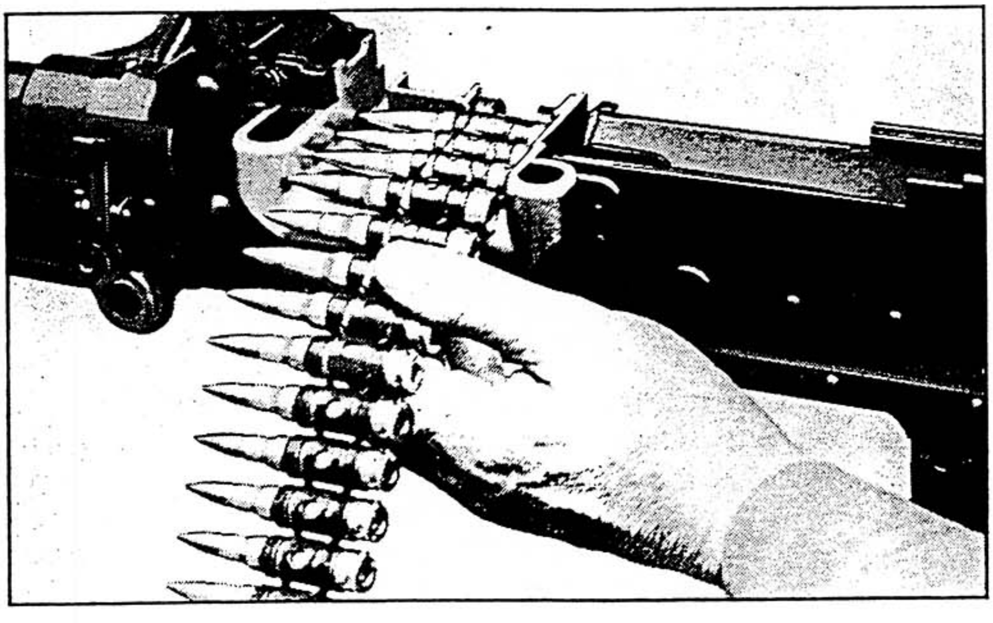


Fig. 44
Positioning the disintegrating link belt

- — Close the cover.
- — Put the safety catch in the fire position, pressing it

completely to the left. The letter "F" is then visible on the left side of the gun (fig. 45).

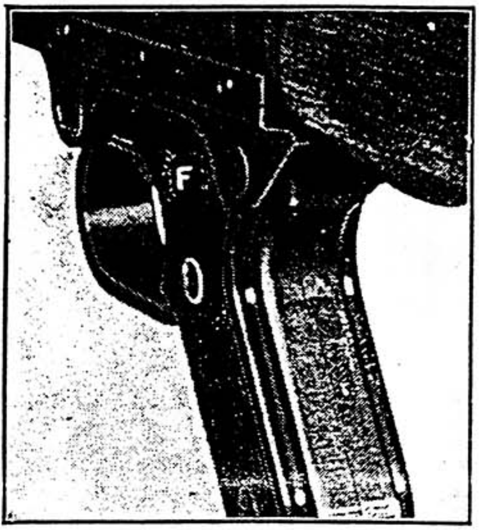


Fig. 45

— Press the trigger to open fire.

— To cease fire, release pressure on the trigger.

503 SAFETY PRECAUTIONS

During any prolonged interruption of fire, for example when moving position, when the belt is still in the gun, put the gun at safe.

When changing the barrel, or, when time is available, and it is necessary to alter the position of the gun or handle the weapon for any other reason, it is always advisable to remove a loaded belt from the gun.

504 HANDLING OF BIPOD

505 POSITIONING THE BIPOD READY TO FIRE

When the bipod is folded up against the body of the gun:

— Exert pressure on the bipod retainer; in the same time, bring the two legs of the bipod slightly towards each other so that their hooks can be disengaged from the recesses made in the sides of the front part of the body (fig. 46).

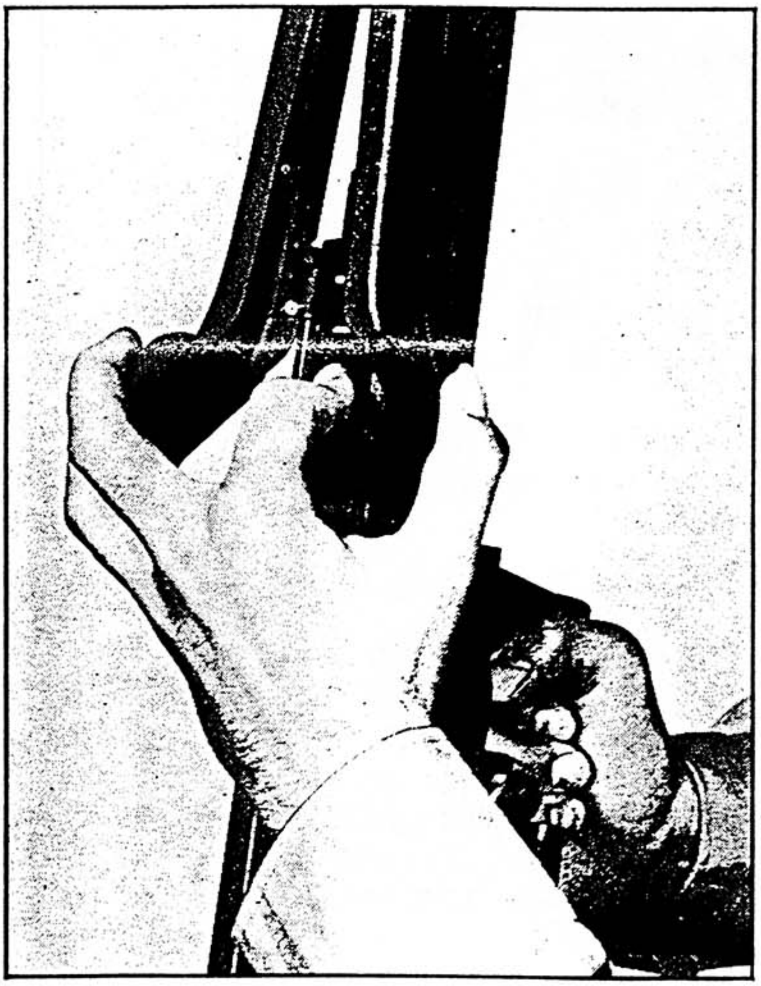


Fig. 46

— Pivot the bipod towards the front; under control of its spring, which causes the bipod legs to open, they separate until they reach a vertical position in relation to the gun, when their studs engage in the grooves in the bipod block. The bipod legs are thus locked in the firing position.

506 FOLDING BACK THE BIPOD

- Bring the legs of the bipod together, which releases the retaining studs from the grooves in the bipod block.
- Turn the bipod towards the rear until the legs are in position alongside the gun.
- Engage the hooks in the recesses in the sides of the front of the body.
- The bipod retainer will return to its normal position.

507 ADJUSTMENT OF THE GAS REGULATOR

Gas regulation before firing is carried out as follows:—

- Turn the knob of the gas regulator screw until the gas regulator sleeve indicates position "1" to give a rate of fire of 650 rounds per minute approx. (fig. 47).

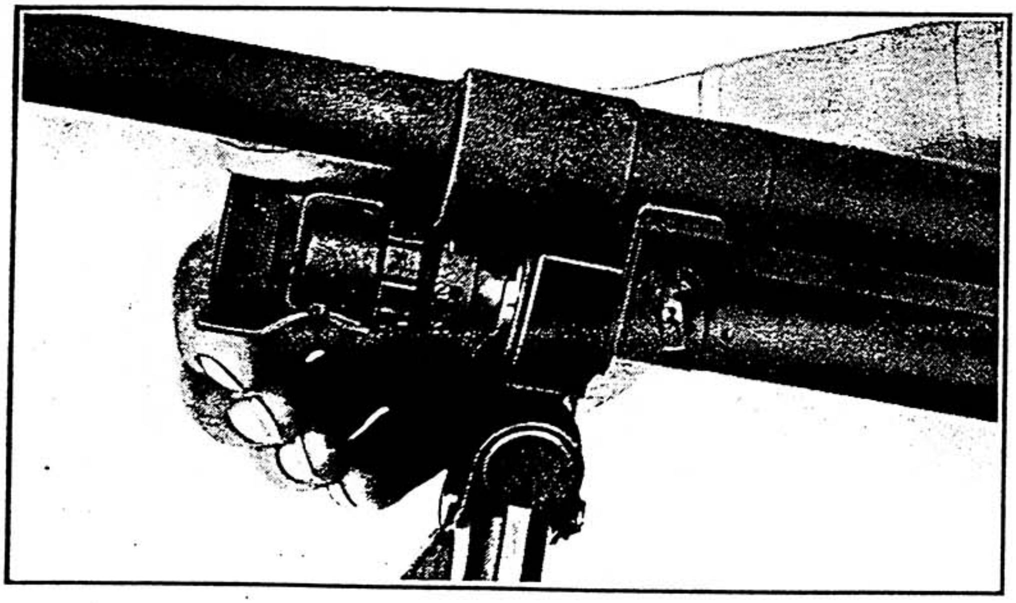


Fig. 47

- If a rate of fire of 1,000 r.p.m. is required, or if reserves of gas are necessary to give the extra power needed to overcome resistance due to adverse conditions, the gas regulator screw should be fully turned, in this case the indicator overdrives the normal stop. In this position, all three gas escape holes are completely blocked and the maximum amount of gas is used to function the gun.

— The positions "2" and "3" can be used either to modify the rate of fire, or, in case of need, to remedy malfunctioning caused by variations in the cartridges fired.

— To ensure normal functioning of the weapon under adverse conditions (mud, sand, etc.) the maximum position should be used.

601 DESCRIPTION

The sights are as follows:—

— A foresight, adjustable in height and direction, mounted at the fore end of the barrel (fig. 48).

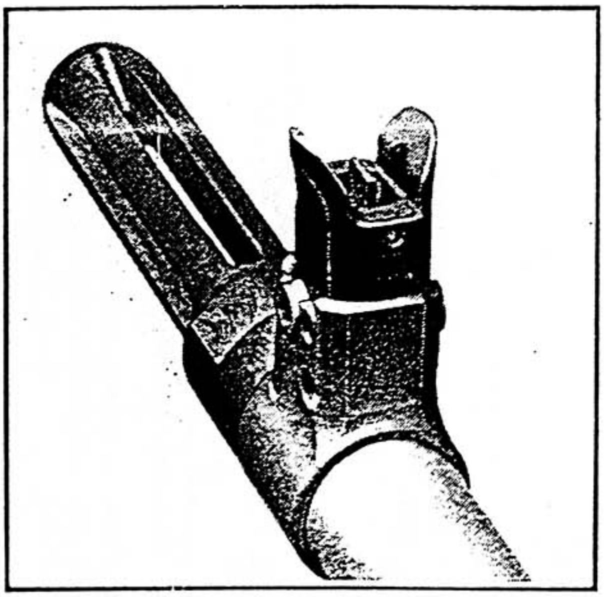


Fig. 48

— A rearsight, located at the rear end of the receiver, which can be used either folded down or raised to a vertical position. Both faces are graduated. Graduations at intervals of 100 metres are marked from 200 to 800 metres on the upper face. These graduations are used when the backsight is used in the folded down position. A slider (or cursor), with two spring catches to keep it fixed in any set position, allows range settings to be adjusted, according to the graduations marked on the rearsight leaf. In this position the rearsight forms a battle sight with peephole (fig. 49). On its reverse face (fig. 50), graduations are marked from 800 to 1,800 metres, at intervals of 100 metres. These graduations are used when the sight is raised in the vertical position. Sighting is through an aperture sight drilled in the slider. This slider can be moved up and down, according to requirement. It is held in the selected position by spring catches.

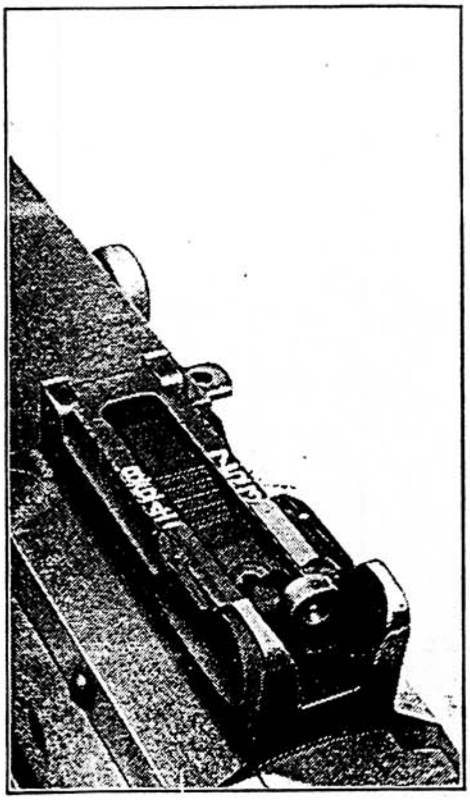


Fig. 49

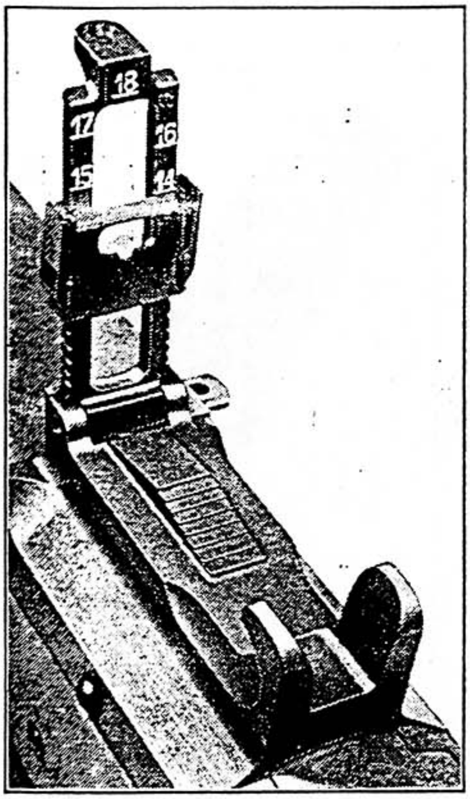


Fig. 50

602 ZEROING

The gun is zeroed before it is issued to the firer, but it may perhaps be necessary to make certain adjustment to correct elevation and direction to suit the individual.

Such adjustments must be carried out by a qualified armourer only.

700 TRIPOD MOUNTING

701 *DESCRIPTION*

The main components of the tripod for the "M.A.G." are the following:

— 1 buffered cradle (fig. 51, 1);
— 1 platform (fig. 51, 2);
— 1 frame (fig. 51, 3);
— 3 articulated legs bolted to the frame.

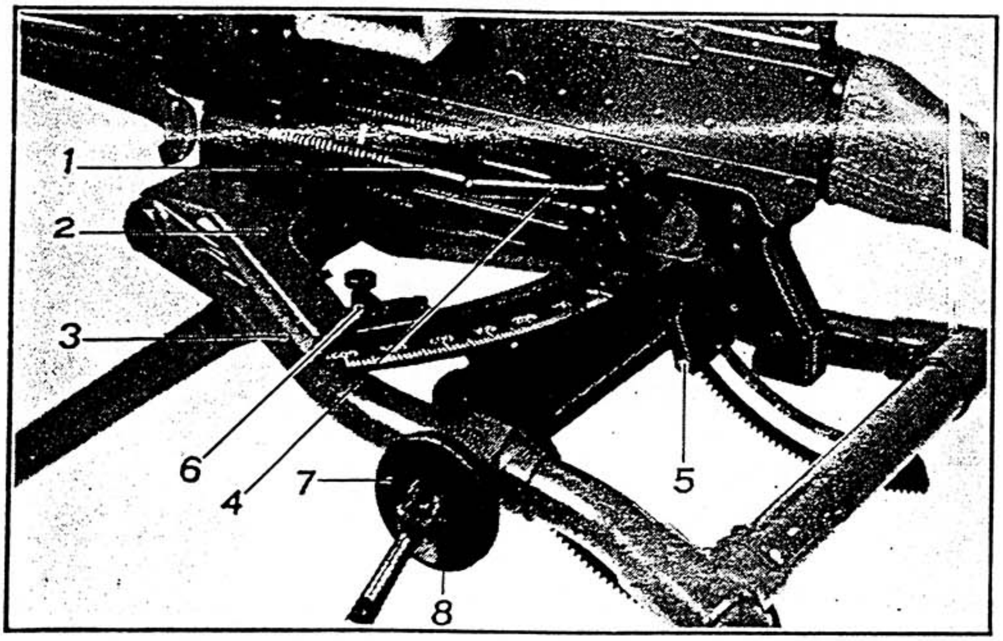


Fig. 51

702 *THE BUFFERED CRADLE* (fig. 51, 1)

The buffered cradle acts as a direct support for the weapon which is fixed to it, in front, by two gudgeon pins (underside of the body), at the rear, by a removable mounting pin (fig. 51, 4).

The buffered cradle is linked in front to the tripod table or platform by means of a vertical pivot around which it can turn to take a bearing. At the rear part of the cradle, there is a clamping handle (fig. 51, 5) which allows to lock the cradle in direction on the platform, after training of the gun, and also a micrometric control (fig. 52, 1) for adjustment of lateral movement.

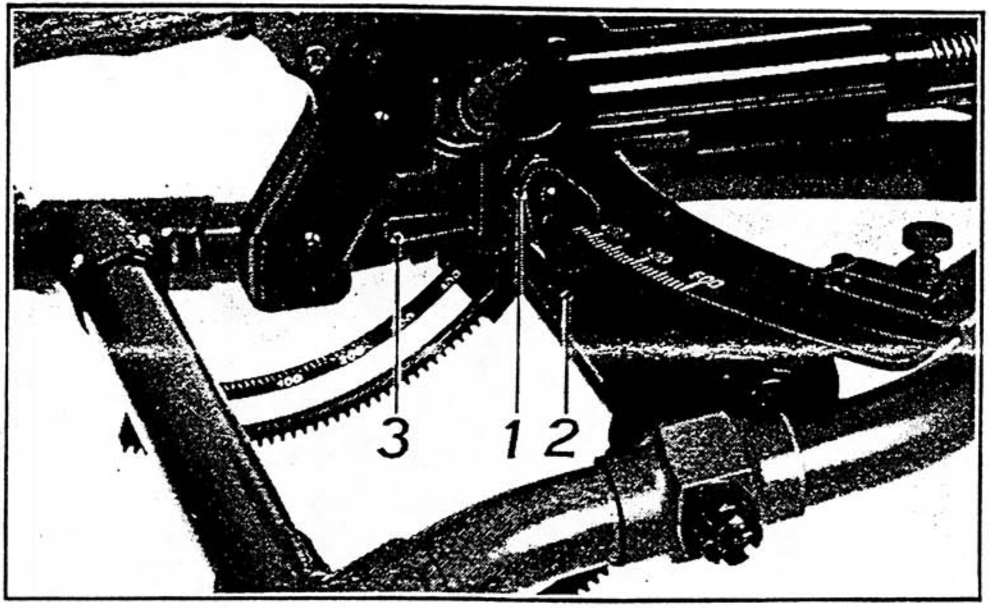


Fig. 52

This micrometric control (fig. 52, 1) is on the right side of the rear section of the cradle and can be fixed in position on the platform by a clamping screw (fig. 52, 2). By rotating the knurled wheel the cradle can then be moved laterally provided that the clamping handle (fig. 52, 3) is not tightened.

Micrometric traverse is made by index (clicker) control; each "click" gives 1 mil, total range of traverse is 30 mils.

Adjustment of traverse can therefore be made in two ways:

Quick control: after loosening the clamping handle (fig. 52, 3) and the screw (fig. 52, 2), bring the cradle to the required fire position and lock with the clamping handle.

Fine adjustment control: position the cradle in the approximate direction of fire and tighten the screw (fig. 52, 2). Then, by rotating the micrometric knurled wheel, the cradle is brought to the precise firing position. Lock with the clamping handle.

Normally, the clamping handle should always be locked before firing, except obviously for sweeping fire.

The buffered cradle is fitted with two springs intended to absorb the recoil of the weapon and to return it to the firing position, thus ensuring good stability during fire.

On the underside of the cradle, there is a shoulder which limits the swing of the gun when it comes against the traverse stops, mentioned below, in the case of sweeping fire.

703 THE PLATFORM (fig. 51, 2)

The platform, in the shape of a sector of circle, is engraved with a double scale graduated in mils (from 0 to 600 mils on either side). This graduation is used to regulate direction of fire in the horizontal plane.

On the upper surface of the platforms or tripod table, there are two traverse stops (fig. 51, 6) with adjusting screws. Setting of these stops gives the required arc of fire, as the shoulder on the underside of the cradle comes into contact with them. The platform is jointed in front to the supporting frame, and at the rear, it is attached to said frame by means of two rack-geared suspension units.

704 THE FRAME (fig. 51, 3)

The frame is made of tubes and a control knob on the left side (fig. 51, 7) allows movement of the gun in elevation, owing to the two racks mentioned above (these two racks engage, through two gears, with a toothed pinion integral with the control knob).

On the same side, and as an extension of the control knob, there is a clamping key (fig. 51, 8) for vertical locking. The elevating knob allows also, if desired, to perform sweeping fire in the vertical plane.

705 *THE THREE LEGS OF THE TRIPOD*

The three legs of the tripod are jointed to the frame. The position of the legs can be adjusted so as to adapt the tripod to the terrain. The clamping keys provided ensure that the legs are firmly locked in the required position. The legs of the tripod have at their ends shoes for anchorage in the soil.

706 *HANDLING OF THE TRIPOD*

707 *ERECTING THE TRIPOD AND MOUNTING THE GUN*

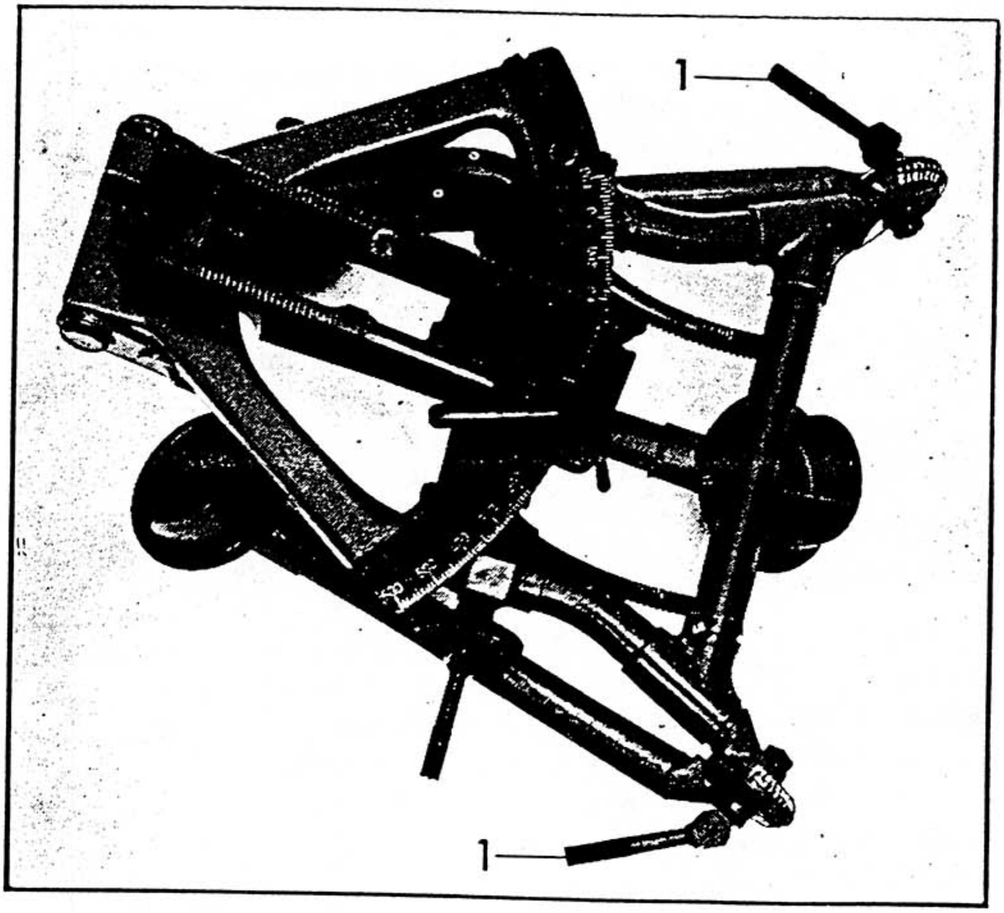


Fig. 53

With the tripod folded as for transport (fig. 53), proceed as follows:—

— Loosen the keys which clamp the legs (fig. 53, 1),

— Bring the legs to the required position. Lock the legs, by means of the clamping keys, in the wanted position,

— Remove the mounting pin from its housing.

— Place the gun on the tripod, inserting the gudgeon pins which are in the underside of the body, under the shoulders at the front of the cradle (fig. 54, 1), whilst the mounting points in the gun, in front of the trigger assembly, are positioned between the lugs made at the rear of the cradle (fig. 54, 2),

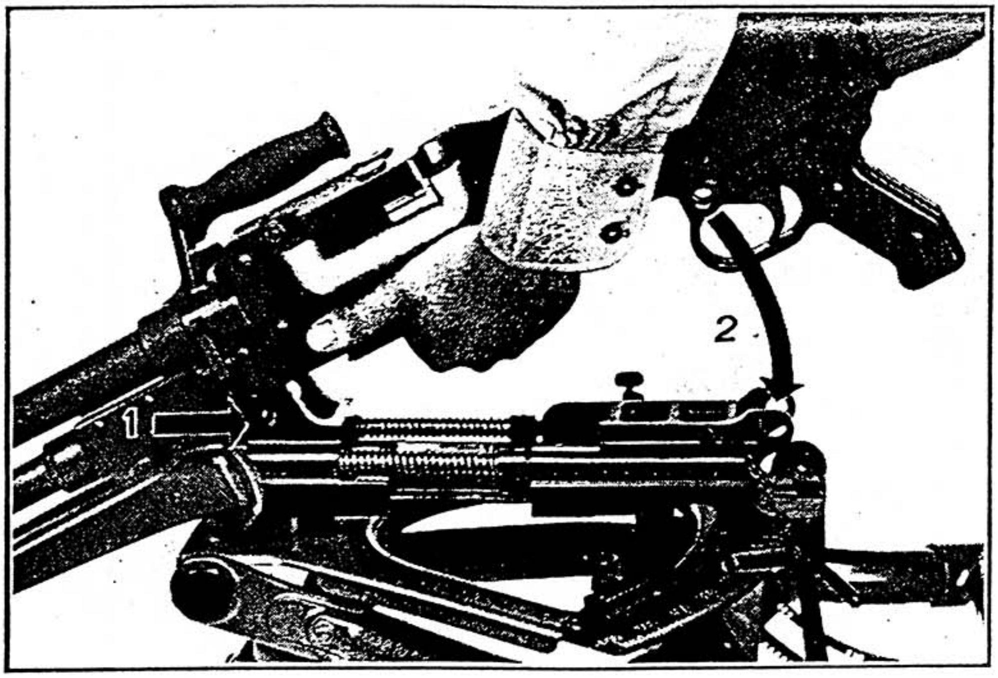


Fig. 54

— Secure the gun on the tripod by the removable rear mounting pin,

— Bring the gun to the required position, acting upon the control knob.

708 FOLDING THE TRIPOD FOR TRANSPORT

To prepare the tripod for transport, from the firing position, proceed as follows:—

- Take out the removable mounting pin which secures the gun at the rear,
- Disengage the gudgeon pins securing the gun forward from the shoulders made in the front part of the cradle,
- Replace the removable mounting pin in its housing in the cradle,
- Bring the platform against the frame by means of the control knob,
- Unclamp the legs of the tripod. Fold them against the frame and fasten them in the folded position with the clamping keys,
- Clamp the cradle to the tripod table, if this has not already been done, using the clamping handle.

709 NUMERICAL DATA

Weight of tripod	approx. 10.450 kgs
Total limit of traverse	approx. 67° (1,200 mils)
High and low limits of elevation (or of depth sweeping fire) by acting upon the racks by means of the control knob .	approx. 30° (530 mils)
Maximum height of barrel axis (high position of tripod legs)	approx. 58 cm
Minimum height of barrel axis (low position of tripod legs)	approx. 33 cm

801 *FOREWORD*

The weapon should be cleaned after each firing session, because:

- some parts such as the barrel, the gas cylinder, the gas regulator, the piston, and the piston extension (breech-block slide) might be corroded by the gas powder residues;
- excess carbon deposit might also prevent good functioning of the weapon.

In peace time, the soldier will thoroughly clean his weapon after firing.

In the field, when the soldier has less time to do so, it will often suffice to remove with scraping and cleaning tools the excess carbon deposit from some spots pointed out hereafter, then oil, and the weapon is ready again to fire.

N.B. It is most important to clean the weapon right after firing with blank ammunition. Should this prove impossible, all the parts in contact with powder gases should be immediately oiled and then cleaned within 12 hours.

802 *STRIPPING FOR THOROUGH CLEANING*

Stripping of the weapon for thorough cleaning by the soldier should be limited to the following:—

- Remove the barrel.
- Unscrew completely the gas regulator sleeve.
- Remove the split collars.
- Remove the gas regulator.
- In case of heavy fouling, proceed as follows:—
  - using spanner OREA 2046 (fig. 55) fitted with a brass maul, hammer on the gas regulator head to unclamp it.

— should it be impossible to release the gas regulator from its sleeve when at even level with it, then apply the nipple of spanner OREA 2037 (fig. 55) on the gas regulator head and keep on hammering with spanner OREA 2046.

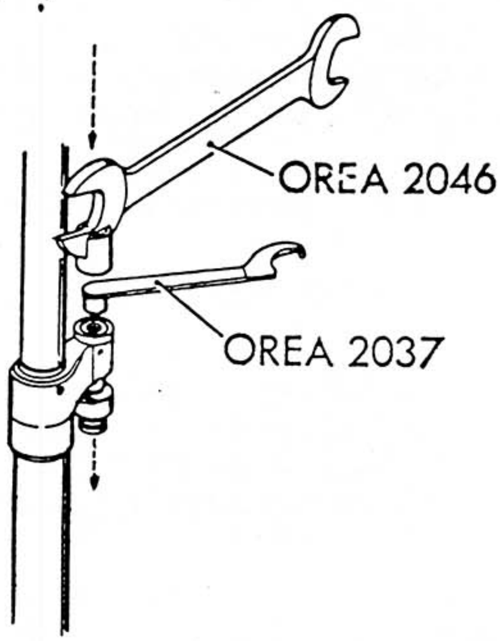


Fig. 55

— Remove the butt.

— Strip the return spring assembly and the mechanism.

— Separate the breech block slide (piston extension) from the breech block assembly by forcing the upper axis link pin out of its housing.

— Strip the extractor with tool OREA 78 (see No. 309).

— Remove the trigger assembly (this assembly will not be stripped) (see No. 311).

— Strip the feed arm from the cover (see No. 315) as well as the feed mechanism (inner, outer and central pawls) (see No. 315).

803 CLEANING

804 BARREL

- To clean the barrel, use, on cleaning rod OREA 87, bore cleaning brush soaked in special oil such as "Rifle bore cleaner" and pass it through several times. The bore cleaning brush should be soaked as many times as required to get a thorough cleaning.
- Dry the barrel passing through it dry flannelette (2 × 4 in.) in OREA 83 on cleaning rod.
  Repeat with fresh flannelette until the last piece comes out spotless.
  Oil lightly the barrel (bore and chamber) with a (1 × 2 in.) piece of oil-soaked flannelette.
- The outside of the barrel will be cleaned with a lightly oiled rag.
  If necessary, use small sharpened sticks to remove fouling from holes and recesses.
  Clean gas vents in the gas block with cleaning drift OREA 97 marked with 3 lines.

805 GAS REGULATOR

1. *Gas regulator sleeve and gas regulator screw knob assembly*

- This assembly will not be stripped.
- Nevertheless it will be most carefully cleaned. Use a wood scraper and clean the outer surface of the assembly with rags.
- Clean the gas escape holes of the gas regulator sleeve with cleaning drift OREA 97.
- With tool OREA 71 clean inside of the gas regulator sleeve.
- To insure a better grip, use spanner OREA 2037 (fig. 56).

— Generally, the other inner parts of the sleeve will only be slightly fouled and easily cleaned with rags and wood scraper.

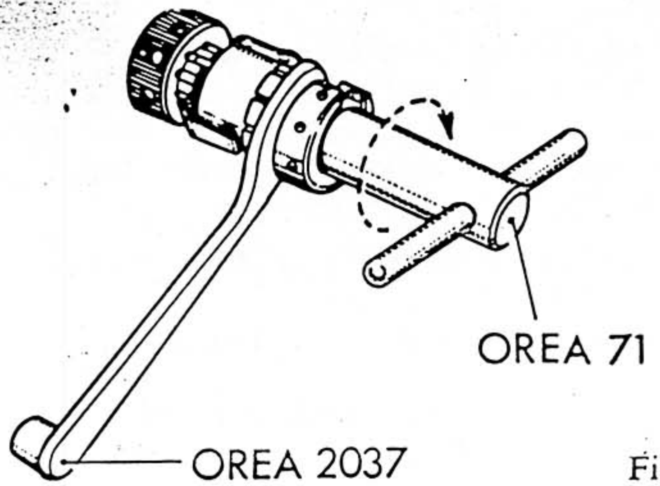


Fig. 56

2. Clean the *gas regulator split collars.* If necessary, use the screw driver of tool OREA 78 to scrape off carbon residues.

3. *The gas plug* will be particularly fouled and will require a thorough cleaning (figs. 58 to 61).

— To clean the *central hole of the gas plug*, insert in it tool OREA 77 turning it clockwise and forcing to get the tool down to the bottom of the hole.
The carbon residues will be completely removed when the face of the gas plug comes into contact with the shoulder of scraping tool OREA 77 (fig. 57).

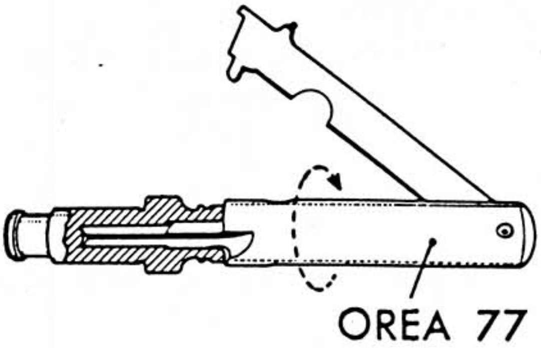


Fig. 57

— To clean *grooves* (figs. 58 and 59) insert tool OREA 77 into the gas plug (fig. 58) and apply as firmly as possible lug X into groove C. Tool OREA 77 arm supporting lug X travels back and forth on the main tool holding pin enabling positive scraping from the fore to the rear wall of groove C. Cleaning is done by rotating the tool clockwise, moving the arm back and forth so as to thoroughly scrape the whole width of the groove.

To clean groove D turn tool OREA 77 (fig. 59) arm around the main tool holding pin so as to bring lug Y in contact with groove D and proceed as for scraping groove C.

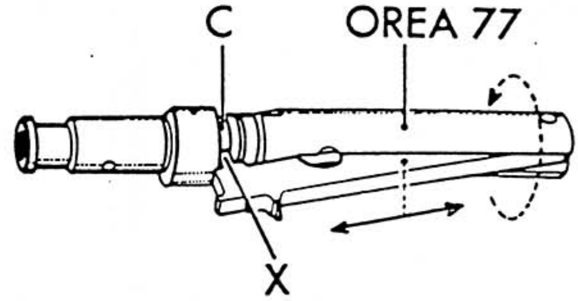


Fig. 58

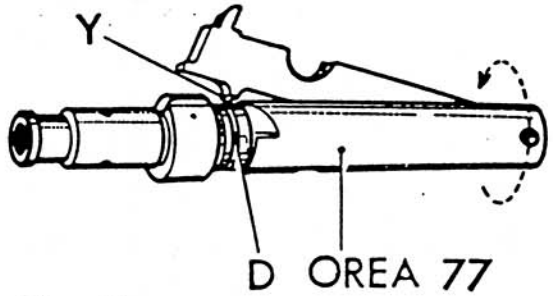


Fig. 59

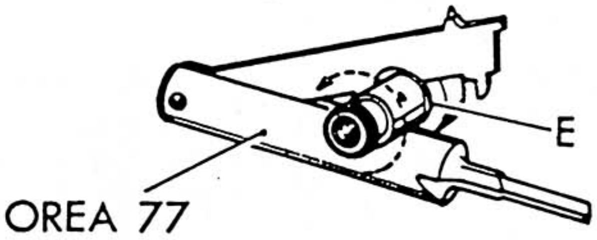


Fig. 60

-- Firmly *clamp groove E* (fig. 60) in recess provided in tool OREA 77 properly folded, then rotate the gas plug for scraping groove E.

- Scrape *notch F* with lug Z of tool OREA 77 arm for thorough cleaning (fig. 61).

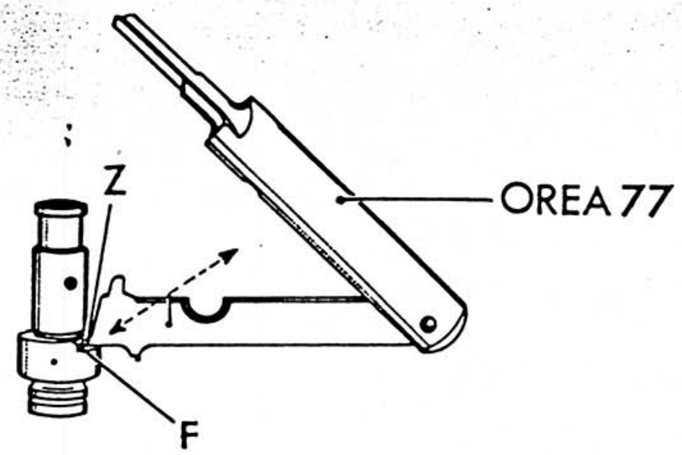


Fig. 61

- Use OREA 97 set of cleaning drifts to clean the *gas plug gas escape holes.*

806 GAS CYLINDER

- The fore end of the gas cylinder gets particularly fouled.
- Remove fouling with tool OREA 78 (fig. 62); rotate clockwise to scrape the groove in the cylinder.

Warning:

When inserting tool OREA 78 into the gas cylinder make sure, before scraping, that it is fully home (shoulder of the tool against fore end face of the cylinder). Should this not be carefully done, the fore end of the gas cylinder, which is of a smaller diameter, might be inadvertently damaged by the scraping tool and subsequent gas leakage might cause gun stoppage.
The gas cylinder bore will be cleaned with brush OREA 93 soaked in special oil such as "Rifle bore cleaner", as for cleaning the barrel.

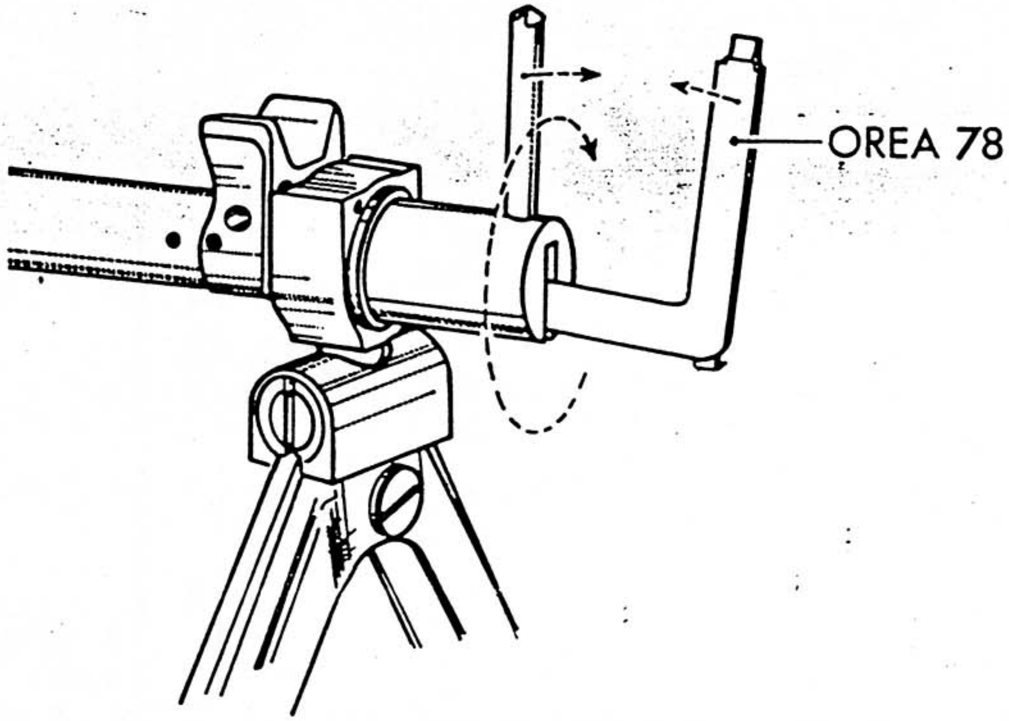


Fig. 62

807 *MECHANISM*

1. *Piston and breech-block assembly*

— Clean with rags and wood scraper then oil the parts which are in constant friction.

— The piston head cavity requires special treatment as carbone residues accumulate in it; proceed as follows:

  — with tool OREA 78 scrape the conical end of the cavity (fig. 63).

  — still with OREA 78 (fig. 64) scrape the inner wall of the cavity.
  Carbon residues remaining in the bottom of the cavity will be easily removed with the screw driver on tool OREA 78.

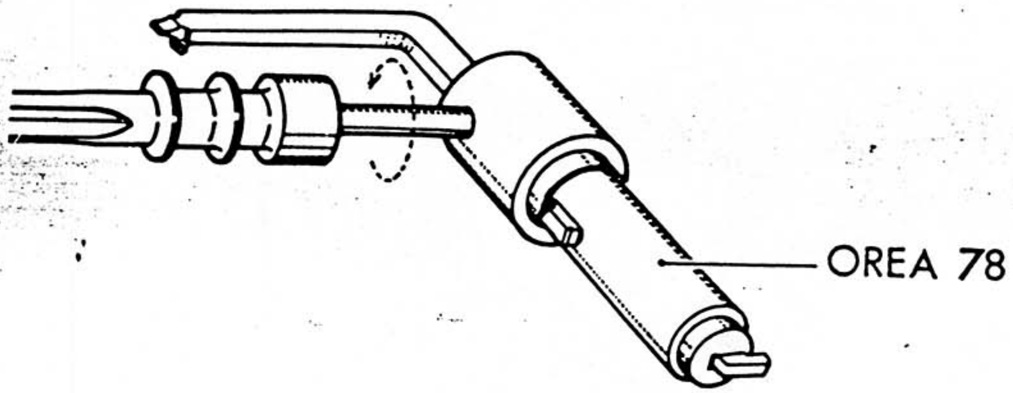


Fig. 63

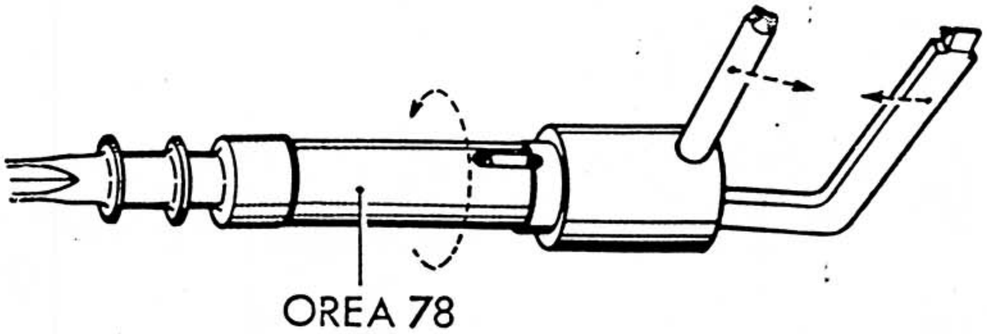


Fig. 64

2. *Breech-block assembly*

— The breech-block (without the extractor), the locking lever and the locking lever link will also be cleaned with rags wood scraper. All these parts, and mainly the breech-block face, should be thoroughly cleaned.

— The parts which are in constant friction will be properly oiled.

3. *Extractor*

— Scrape off the fouling and brass residues from under the extractor claw and clean carefully.

— The extractor spring and the extractor plunger will be oiled prior to reassembly.

4. *Feed mechanism cover*

Remove the feed arm assembly and the feed mechanism from the cover, as described under No. 315. Clean the back of the cover with rags. Use a brush to clean the feed mechanism pawls (be careful not to unbed the spring with too vigorous brush strokes).

5. *Trigger mechanism*

— The trigger mechanism does not require special cleaning except after use under adverse conditions. Should it be clogged, thus preventing good functioning, only the unit armourer is authorized to strip it for thorough cleaning. Usually it will suffice, after having removed the trigger grip side stocks, to dip it and shake it in petrol.

— Oil after cleaning.

808 LUBRICATION

— When reassembling, apply oil and grease where required

— Apply oil to the parts in constant friction except the ones in contact with the powder gases.

— Do not use too fluid an oil which leaks out and thus is too quickly eliminated. Light grease can very well be used.

— Too much oil never prevents good functioning of the weapon.

Listed below are the parts to be or not to be lubricated.

Lubricated	*Left dry*
Mechanism return spring assembly	Barrel
Breech-block	Breech-block head
Breech-block slide	Piston
Body inner walls	Gas regulator
Feed mechanism	Gas cylinder
Trigger mechanism	Rearsight
	Outside of gun

LOADING AMMUNITION BELTS

The feed mechanism of the weapons are from the outset, either for metallic links belts of 50 cartridges, which can be linked to further belts by means of a, cartridge (fig. 65), or for belts made from disintegrating links M 13, which can be of any practical length, as required by the user (fig. 67).

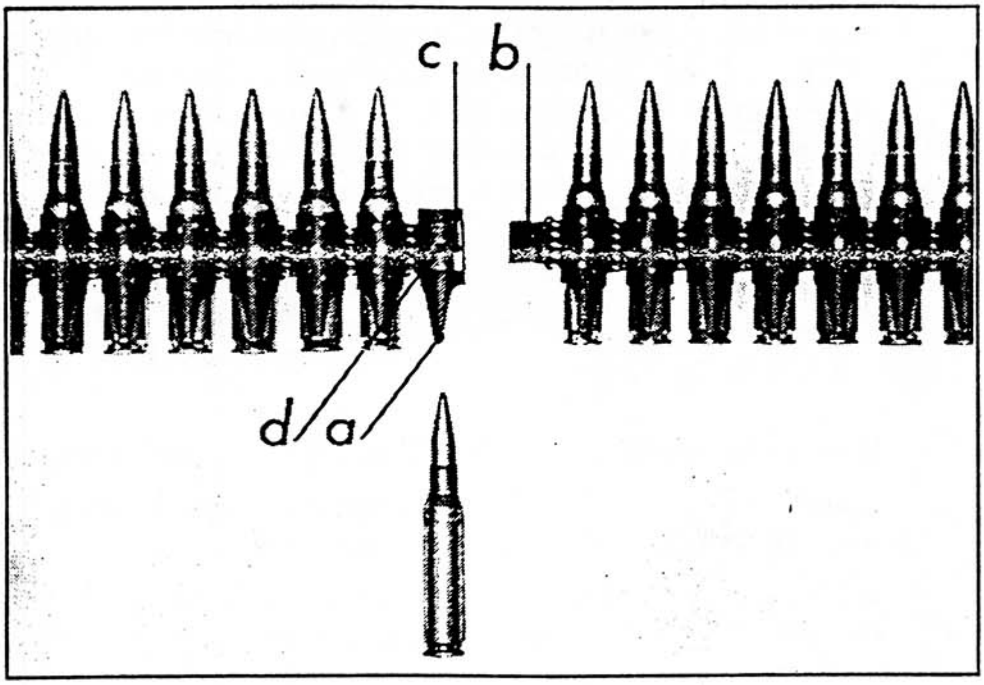


Fig. 65

a. Rib for positioning the round. b. Loop of last link.
c. Slot in leading link. d. Leading link

The two feed systems are not interchangeable.

Each round, whatever the type of belt, occupies a separate link in the belt and is held firm by the pressure exerted by the link wall. The cartridge is also kept in position in the belt by means of a rib, on the back of the link which engage the groove in the cartridge case, when the rounds are correctly aligned. This ensures that all the rounds in the belt are evently placed.

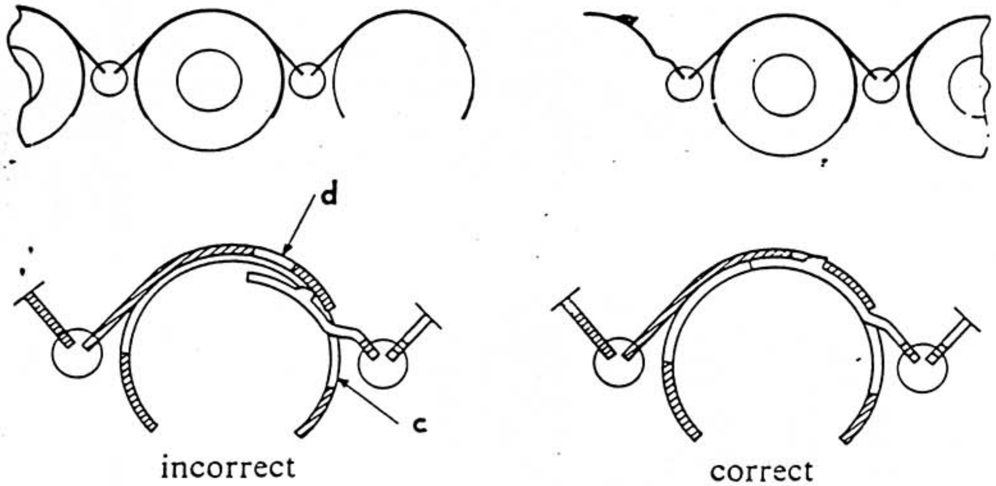


Fig. 66

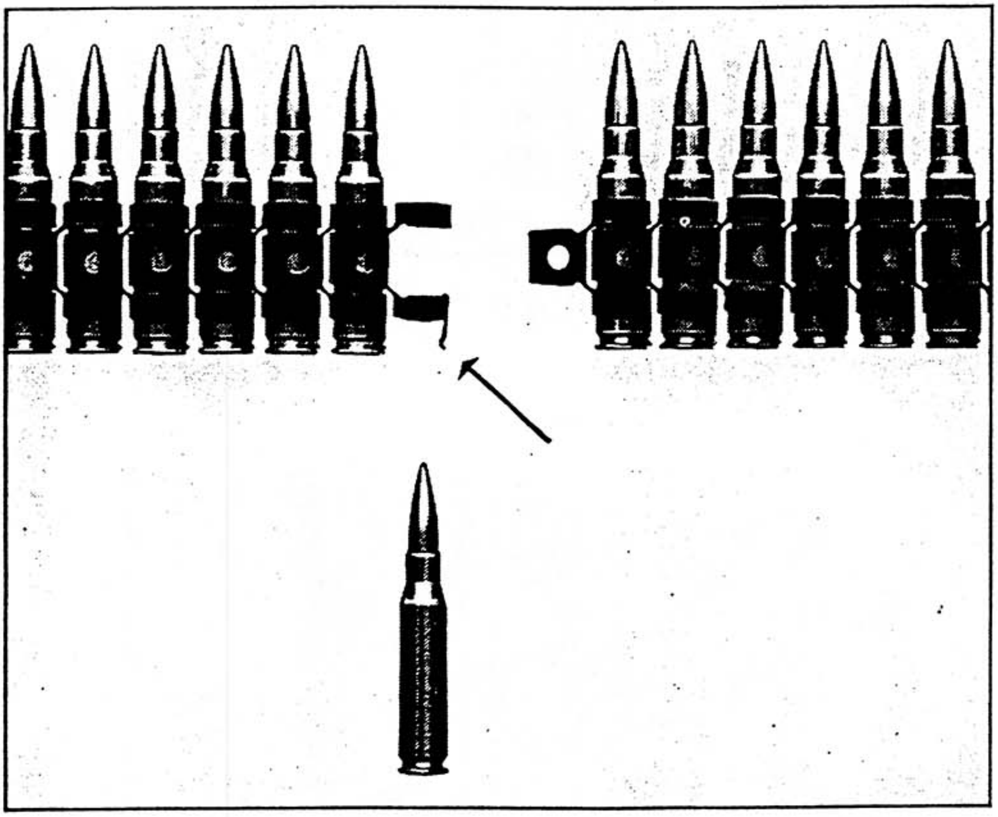


Fig. 67

The arrow shows the rib for positioning the cartridge correctly

The belt can be fed in from a feed box of 50 cartridges (fig. 68) or from a metal container which normally takes 250 rounds (fig. 69).

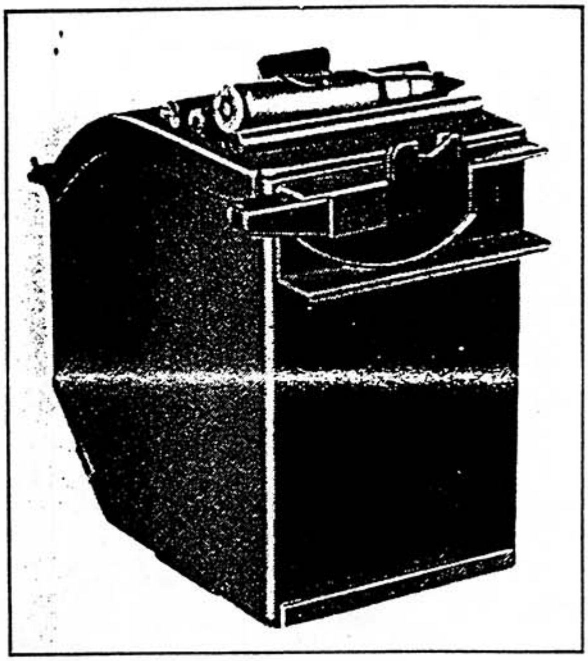


Fig. 68

Feed box for belt of 50 rounds

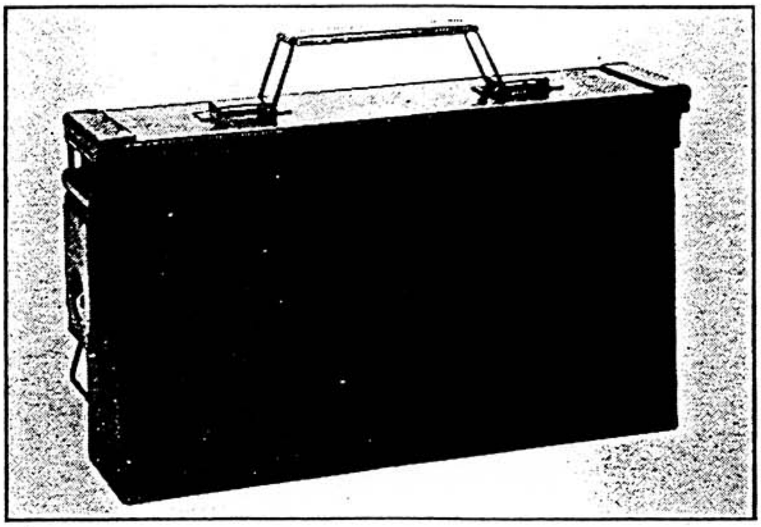


Fig. 69

Container for belt of 250 rounds

1000 FIRING INCIDENTS AND THEIR REMEDIES

1001 GENERAL REMARKS

1. Firing incidents are very rare with the FN machine gun "M.A.G.", provided that cleaning and maintenance operations are regularly carried out, as normally required for any automatic weapon.
2. The following is not therefore an indication as to the frequency of firing incidents but a guide for the user when maintenance regulations have not been observed, or when breakage of parts occurs, due to prolonged use of the gun, or when defective ammunition has been used.

1002 IMMEDIATE ACTION

The immediate action procedure remedies practically all stoppages which are not due to breakage of parts, or insufficient gas.

1st Immediate action

1. Hold the gun in the firing position.
2. Cock the mechanism and make sure that it is held to the rear, put the gun at "safe".
3. Open the cover and remove the belt.
4. Release the safety and press the trigger to close the mechanism.
5. Re-cock the gun.
6. Replace the belt, making sure that the first cartridges are correctly positioned.
7. Close the cover.
8. Resume firing.

2nd Immediate action: If the 1st action does not succeed:

1 to 5. As for 1st immediate action.

6. Close the gas regulator by 1 or 2 "clicks".
7. Replace the belt.
8. Close the cover.
9. Resume firing.

3rd Immediate action

1 to 5. As for 1st immediate action.

6. Change the barrel.
7. Replace the belt.
8. Close the cover.
9. Resume firing.

Warning

- Never remove the barrel from the gun unless the mechanism is correctly held to the rear in the cocked position and without making sure that no cartridge remains in the feed tray or in the chamber.
- Inspect to see if the bore, chamber and regulator of the barrel which has been removed are correct.

1003 STOPPAGES

- If the same incidents recur, their cause must be discovered.
- Before consulting the table of stoppages, carry out the 1st immediate action and bear in mind the following questions, which will act as a guide to the cause of the stoppage.

Questions	*Line of investigation*
1. Is there a cartridge case in the chamber? If this is so:	Failure to extract Short recoil.

2. Is there a cartridge in the chamber? If this is so:	Misfire or failure to ignite Incomplete closing of mechanism.
3. Is there a cartridge case jammed in the mechanism? If this is so:	Failure to eject Short recoil.
4. Is there a cartridge jammed in the feed mechanism? If this is so:	Failure to feed Short recoil Defective belt Defective cartridge Damaged links, or belt.

1104 TABLE OF STOPPAGES

Cause	*Remedy*
Failure to extract The spent cartridge case is not extracted from the chamber	
Broken extractor claw.	Change the extractor.
Broken extractor spring.	Change the extractor spring.
Fouling of chamber (possibly tearing away of the rim of the case).	Clean the chamber, if necessary, change the barrel.
Insufficient gas, lack of power.	Adjust the gas regulator towards the completely closed position.

Cause	*Remedy*
Misfire or failure to ignite	
The shot does not go off; the cartridge enters the chamber but is not fired	
Broken or damaged firing pin.	Change the firing pin.
Defective cartridge.	Remove the defective round.
Light strike, incomplete or sluggish closing of mechanism.	Clean the gun.
Failure to eject	
The spent cartridge case is not ejected	
Broken or damaged ejector.	Change the ejector.
Ejector spring broken or slack.	Change the ejector spring.
Insufficient gas, lack of power.	Turn the gas regulator towards the completely closed position.
Extractor or its spring broken or damaged.	Change the extractor or its spring.
Failure to feed	
Cartridge does not enter the chamber	
Incorrect position of cartridge in the belt.	Correct the position of the cartridge, check the alignment of the other rounds.
Component of feed mechanism broken (pawls or springs).	Change the defective part.

Cause	*Remedy*
Return spring broken or sluggish.	Change the return spring.
Belt incorrectly positioned in the feed tray.	Remove the belt and replace correctly.
Damaged links.	Remove the defective links from the belt.
Defective cartridge.	Remove the cartridge.

Short recoil

The mechanism does not recoil up to the buffer block

Incorrect gas setting.	Turn the gas regulator towards the completely closed position.

The mechanism does not recoil sufficiently

Fouling of weapon.	Clean the gun.
Jamming in the movement of the parts.	Operate to inspect the moving parts and eliminate causes of jamming.

The mechanism is not held in the rear position when the trigger is released

Insufficient gas, lack of power.	Turn the gas regulator towards the completely closed position. If necessary, lubricate the mechanism.
Defective component of trigger mechanism.	Change the defective part.

Cause	*Remedy*
Incomplete closing The mechanism does not complete its forward action	
Fouling of the mechanism, or the body (sand, mud).	Clean the gun.
Return spring broken, slack or bent.	Change the return spring.
Dirty or defective cartridges.	Eliminate dirty or defective rounds.
Ruptured case, the following cartridge does not completely enter the chamber.	1) *If the weapon is not, or is only slightly heated by firing.* Cock the mechanism to eject the cartridge. In case of difficulty in cocking, use a piece of wood to knock the cocking handle back to the rear. After cocking, if the ruptured case has not been ejected with the cartridge, put the gun at safe, remove the barrel, and extract the remaining part of the ruptured case with the tool for extracting defective cases. 2) *If the weapon is very hot after prolonged firing.* Wait two minutes before carrying out the operations indicated above as a precaution against a possible firing of the round caused by transmission of heat (cook off).

RECOMMENDATIONS AND PRECAUTIONS

1. For carrying purposes, bring the piston/breech block assembly to the forward position by pressing the trigger to free the slide. To safeguard the mechanism from too violent movement, while pressing the trigger, use the cocking handle to brake the forward action.
2. As previously stated, components liable to wear by friction should be lightly oiled. It is, however, important not to lubricate too generously, especially in sandy terrain. Under such conditions, the outside of the gun must be kept practically dry.
3. Never insert a cartridge by hand in a barrel heated by firing.
4. In case of misfire, let at least 5 seconds elapse before opening the mechanism and clearing the misfired round.
5. In the event of a stoppage, open the feed cover and take out the ammunition belt.
6. When the gun is not in use, the ejection opening cover must be closed to avoid sand or dust getting into the mechanism. When firing recommences, the user has no need to touch this cover, which opens automatically when it is contacted by the piston extension.
7. Take care that ammunition belts do not trail in mud or dust before passing into the feed mechanism.

1200 "COAXIAL" AND "AIRCRAFT" MODELS

FN also produce the "Coaxial" and "Aircraft" models which differ as follows from the "Infantry" standard model described in this booklet.

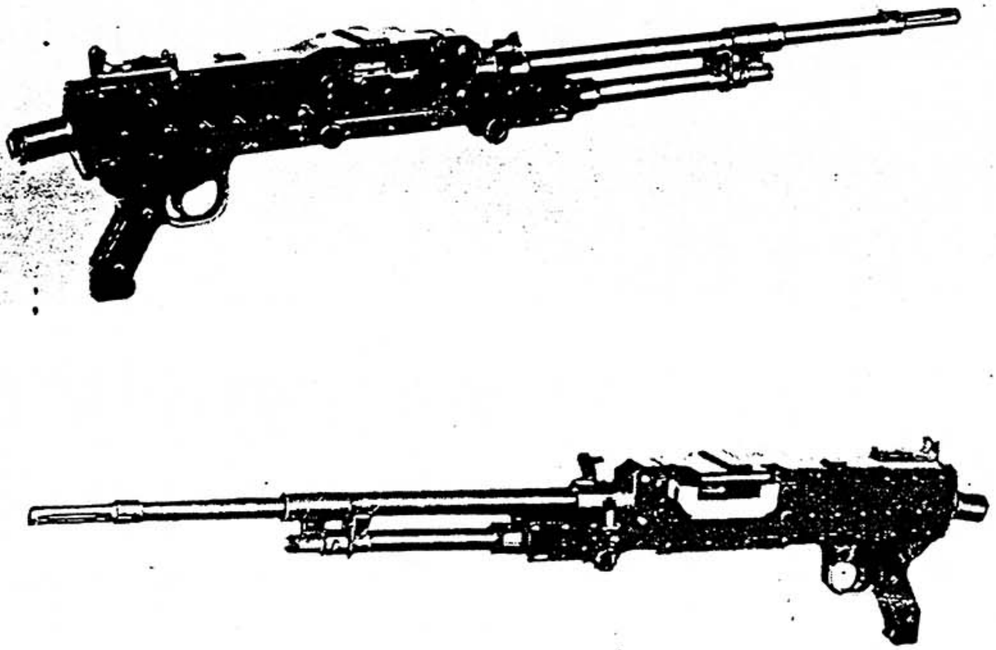
"COAXIAL" MODEL (FOR TANKS) (figs. 70 and 71)

- — No bipod.
- — Special buffer recoil in lieu of stock.
- — Sights on request (foresight mounted on the rear part of the barrel).
- — Spindle, barrel locking, without carrying handle.
- — Special "barrel group" according to type of vehicle.
- — Three position gas regulator without escape of gas in the vehicle.
- — Gas cylinder without escape holes for remaining gases.
- — No sling swivel.
- — Feed by disintegrating link belts (M 13). In some cases, possible use of metallic link belts.

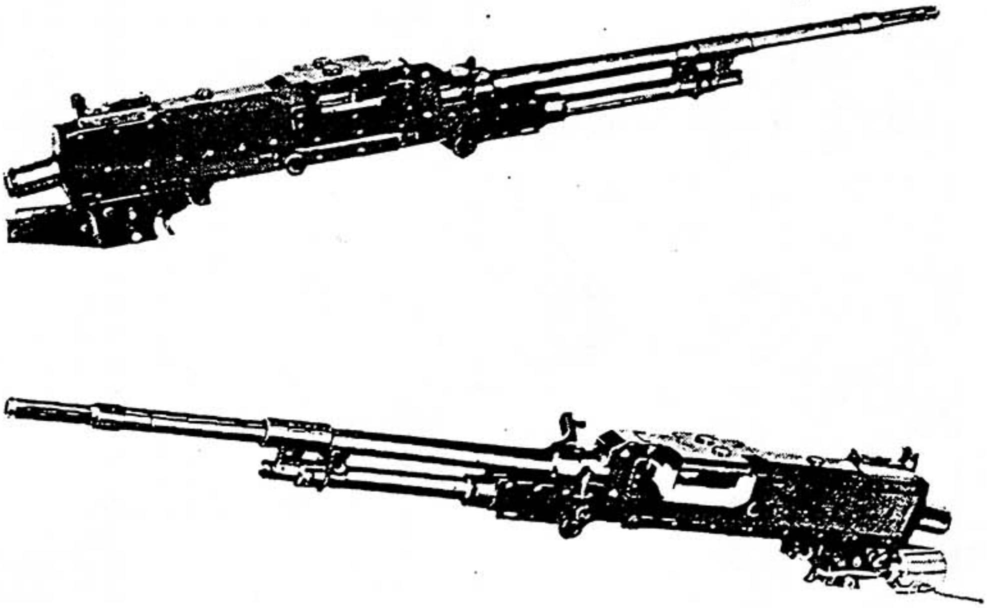
"AIRCRAFT" MODEL (figs. 72 and 73)

- — No bipod.
- — Special buffer recoil in lieu of stock.
- — No sights.
- — Spindle, barrel locking, without carrying handle.
- — Barrel locking catch with locking screw and securing wire.
- — Three position gas regulator without gas escape.
- — Special trigger-guard with solenoid.
- — Feed by right or left side.
- — No ejection opening cover.

Functioning, handling and maintenance are nearly the same for the three models. This booklet may be used as a standard reference save for following items:



Figs. 70 and 71 — G.P.M.G. - "Coaxial" model.



Figs. 72 and 73 — G.P.M.G. - "Aircraft" model.

302 REMOVING THE BARREL OF "AIRCRAFT" MODEL

Before carrying out the operations described in this booklet:

— Remove the securing wire.

— Unscrew the locking screw of the barrel locking catch.

303 REPLACE THE BARREL OF "AIRCRAFT" MODEL

After carrying out the stripping operations described in this booklet:

— Tighten the locking screw of the barrel locking catch.

— Replace the securing wire.

304 REMOVING THE BUFFER RECOIL OF "COAXIAL" AND "AIRCRAFT" MODELS

Refer to figure 74 hereafter.

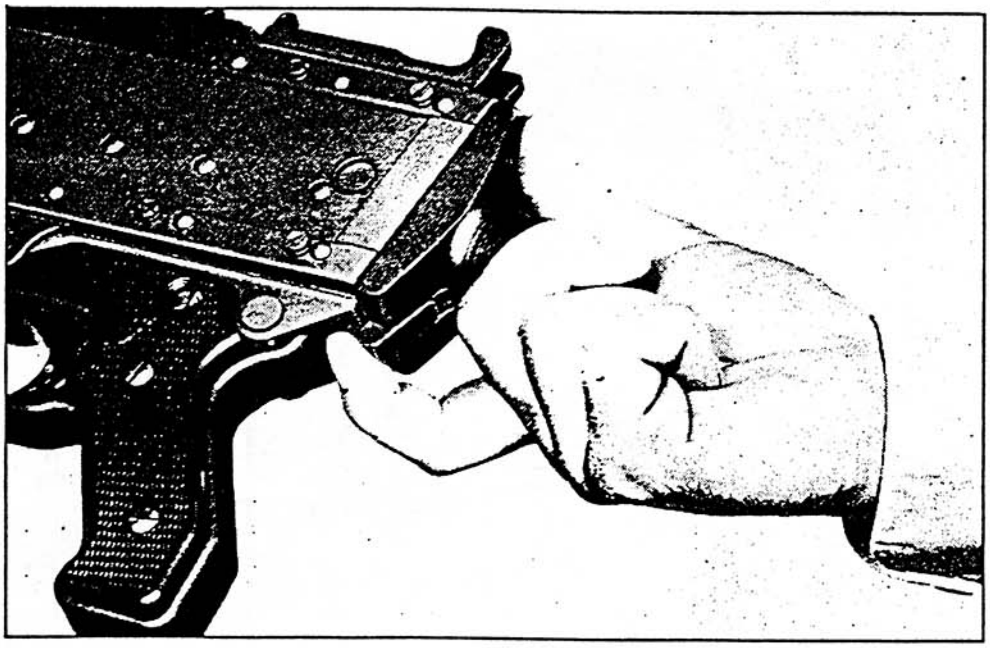


Fig. 74 — Removing the buffer recoil.

311 REMOVING THE TRIGGER-GUARD

The "Coaxial", "Aircraft" and some "Infantry" models are equipped with a retaining pin with spring. To disengage the rear part of the trigger-guard, merely push this pin out of its housing as shown on figure 75.

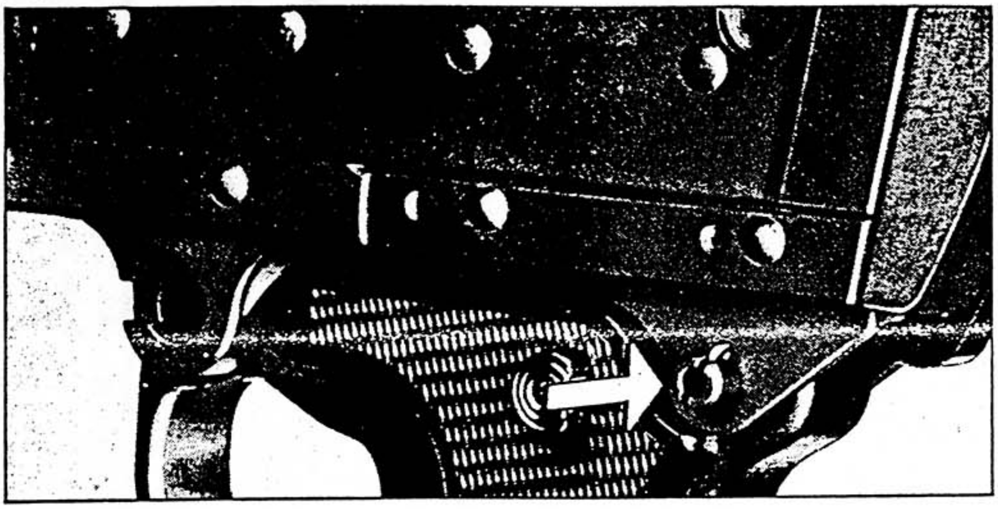


Fig. 75

314 REMOVING THE COVER AND THE FEED TRAY

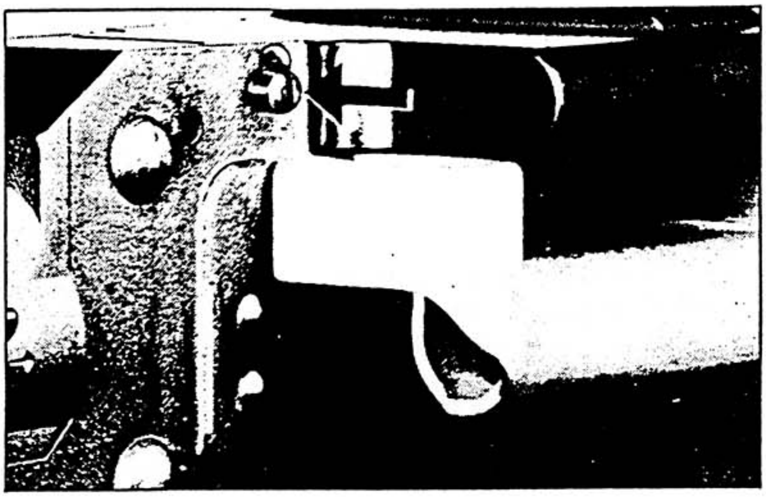


Fig. 76

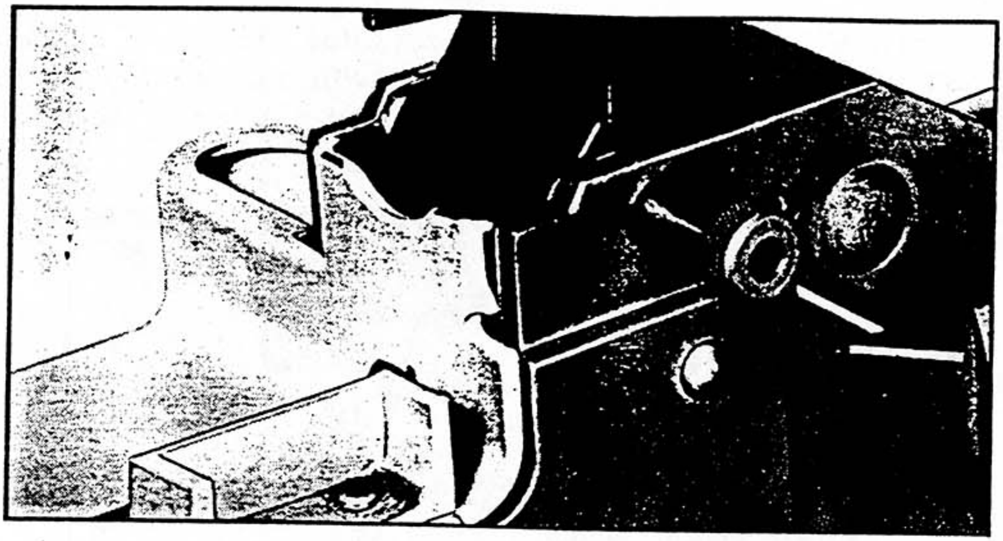


Fig. 77

The "Coaxial", "Aircraft" and some "Infantry" models are equipped with a retaining axle-pin with spring. To remove the cover as well as the feed tray which also pivots around this axle-pin, push the axle-pin out of its housing, as shown on figures 76 and 77.

316 REMOVING THE THREE POSITION GAS REGULATOR "COAXIAL" AND "AIRCRAFT" MODELS

- Take notice of the figure on the regulator which faces the barrel, since the regulator will have to be remounted in that position (fig. 78).
- Withdraw the regulator bolt safety (a, fig. 79).
- Unscrew the bolt (b, fig. 79).
- Push the regulator to the rear and withdraw (c, fig. 79).

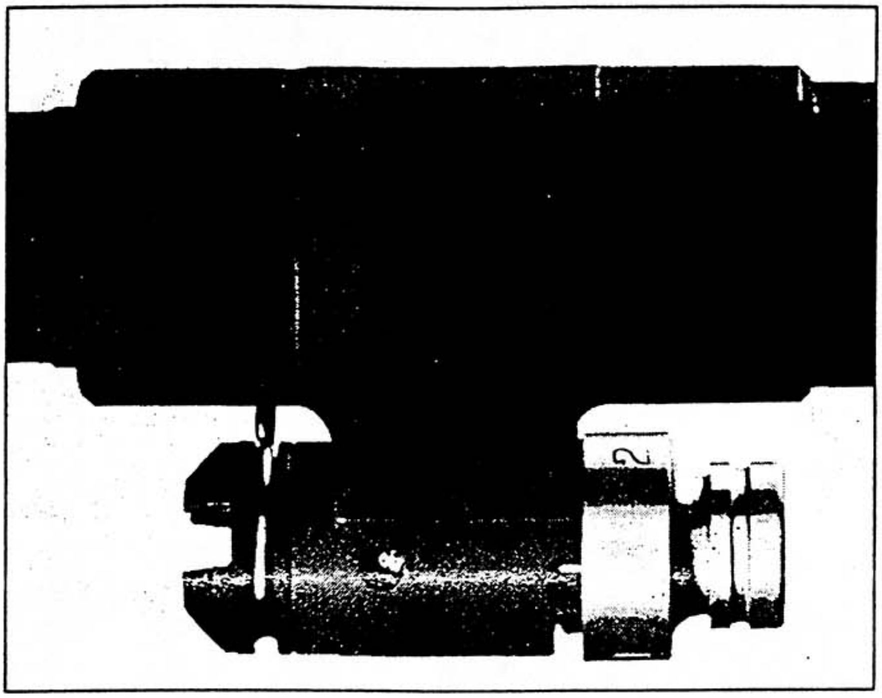


Fig. 78 — Three position gas regulator.

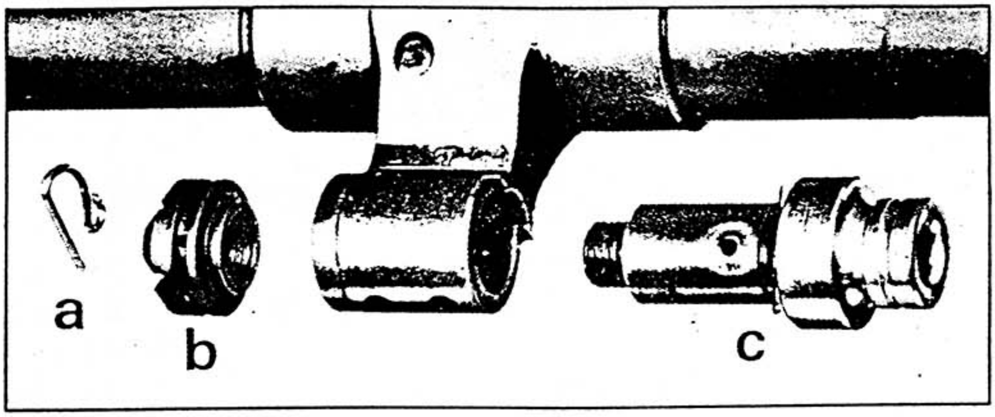


Fig. 79

317 *ASSEMBLING AND REMOUNTING THE THREE POSITION GAS REGULATOR*

— Introduce the regulator in the gas block. The figure noted when stripping should appear opposite the barrel and the ribs of the gas regulator should rest against the notches in the gas block (c, fig. 80).

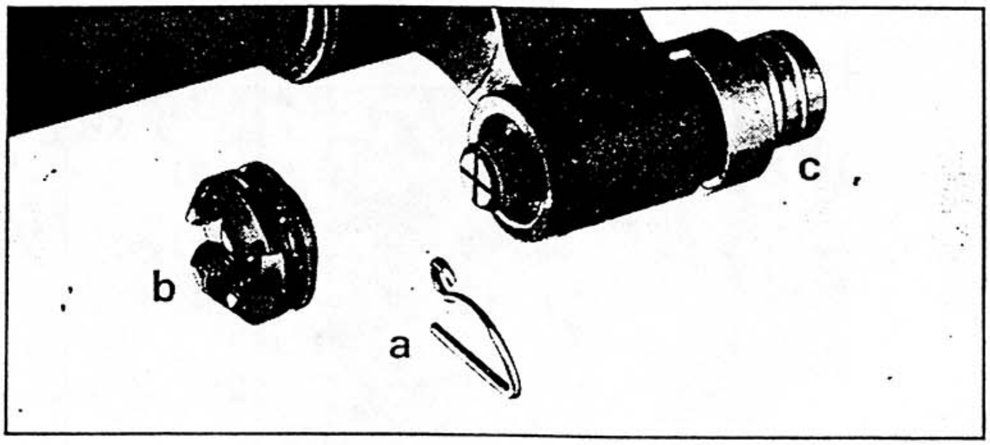


Fig. 80 — Three position gas regulator.

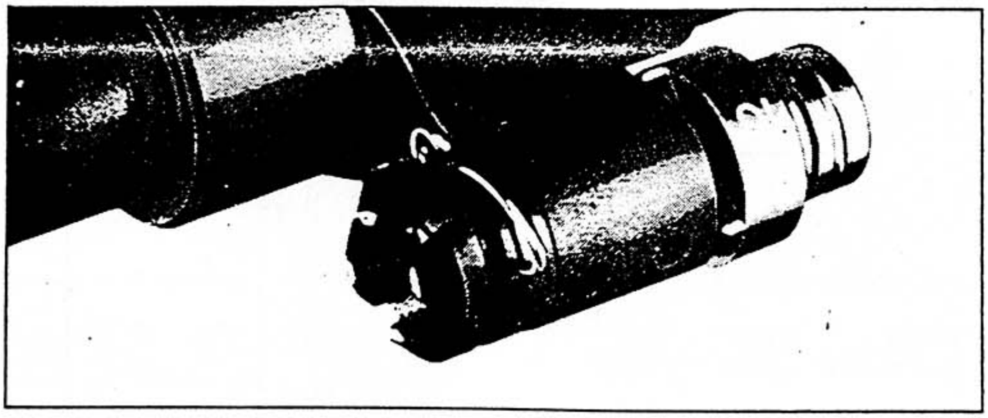


Fig. 81

- — Screw the bolt fully home so that one of its side holes (b, fig. 80) is in line with one of the arms of the cross stamped on the regulator head.
- — Insert the straight part of the safety (a, fig. 80) fully home in the holes (fig. 81).

404 FUNCTIONING OF THE THREE POSITION GAS REGULATOR (fig. 82)

This regulator being of the "gas inlet" type, the total amount of gas taken in push on the piston, without any outside escape.

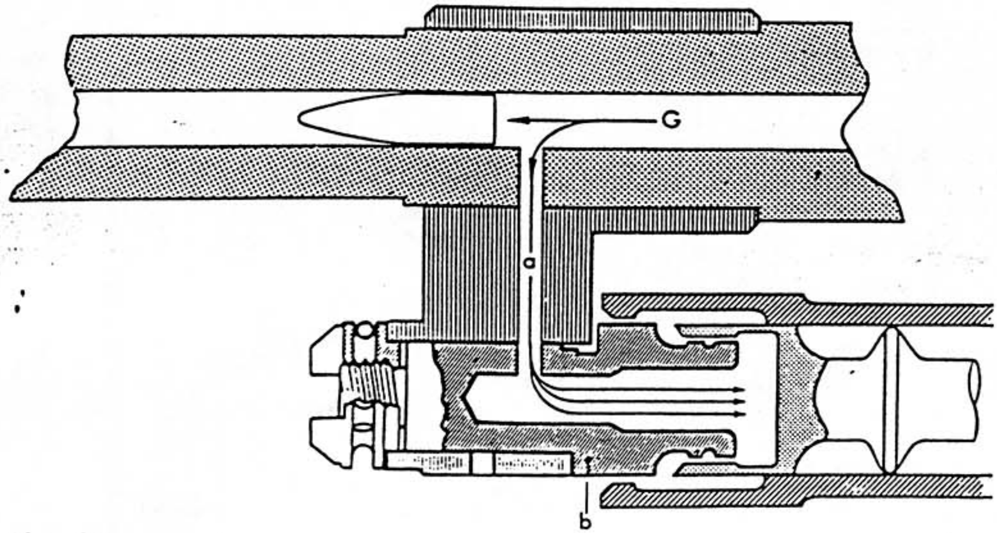


Fig. 82

Three positions are possible:

- Figure "1" facing the barrel: minimum inlet, thus giving the lowest rate of fire.
- Figure "2" facing the barrel: medium position.
- Figure "3" facing the barrel: maximum inlet, thus giving the maximum rate of fire.

507 RATE OF FIRE SELECTION WITH THE THREE POSITION GAS REGULATOR

Before firing, the appropriate gas regulation is obtained as follows:—

- Withdraw the regulator bolt safety.
- Slightly unscrew the regulator bolt so as to disengage the regulator from its locating base and allow it to pivot.
- Set the gas regulator with figure "1" facing the barrel (fig. 83).
- Tighten the bolt and replace the safety referring to the cross stamped on the regulator head. A rate of fire of 700 to 800 r.p.m. is to be expected.
- Should the rate be too low, repeat the above mentioned operations, but with figure "2" of the regulator facing the barrel.

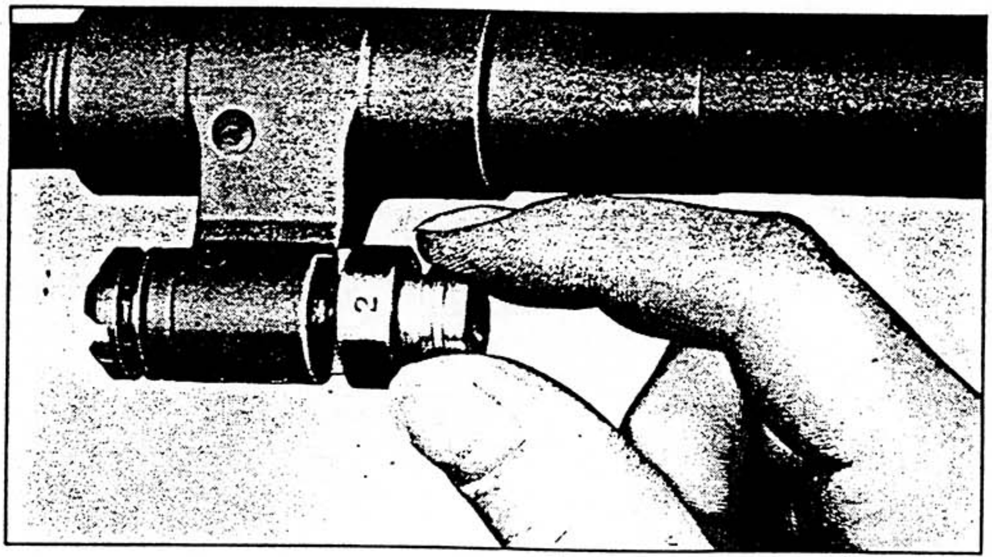


Fig. 83

— Should the maximum rate of fire be needed to overcome adverse conditions, set directly the regulator with figure "3" facing the barrel.

805 CLEANING THE THREE POSITION GAS REGULATOR

This regulator having neither sleeve nor screw knob, just ignore item 805.1.

1005 STOPPAGES DUE TO SOLENOID AND TRIGGER-GUARD MECHANISM

Cause	*Remedy*
The trigger does not function and *sparks are visible* in the electrical circuit or around the weapon	
Ill connection of the terminals of the electrical power supply of the solenoid.	Check the electrical circuit and re-connect correctly the terminals. Eventually, check the fuses.

Cause	*Remedy*
The trigger does not function but *sparks are not visible* in the electrical circuit or around the weapon.	
Safety in on.	Put the safety on "F" (fire).
The battery is unsuitable.	Check the battery (24 V).
The electrical circuit is not connected.	Correctly connect the solenoid.
The electrical circuit is ill connected.	Correctly connect the circuit.
Lost or spoiled pins (A, figs. 84 and 85).	Set the rod in the correct position and replace the pins.
The assembly screws (B and C, figs. 84 and 85) are loosen.	Tighten these screws with an Allen wrench of 6 mm (screw B) and 5 mm (screw C).

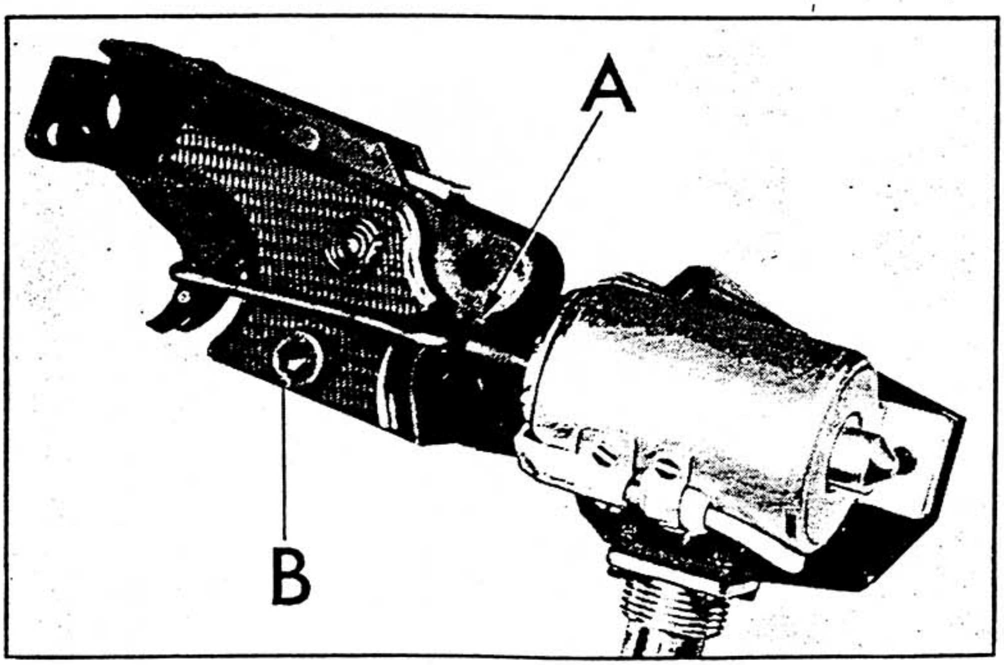


Fig. 84

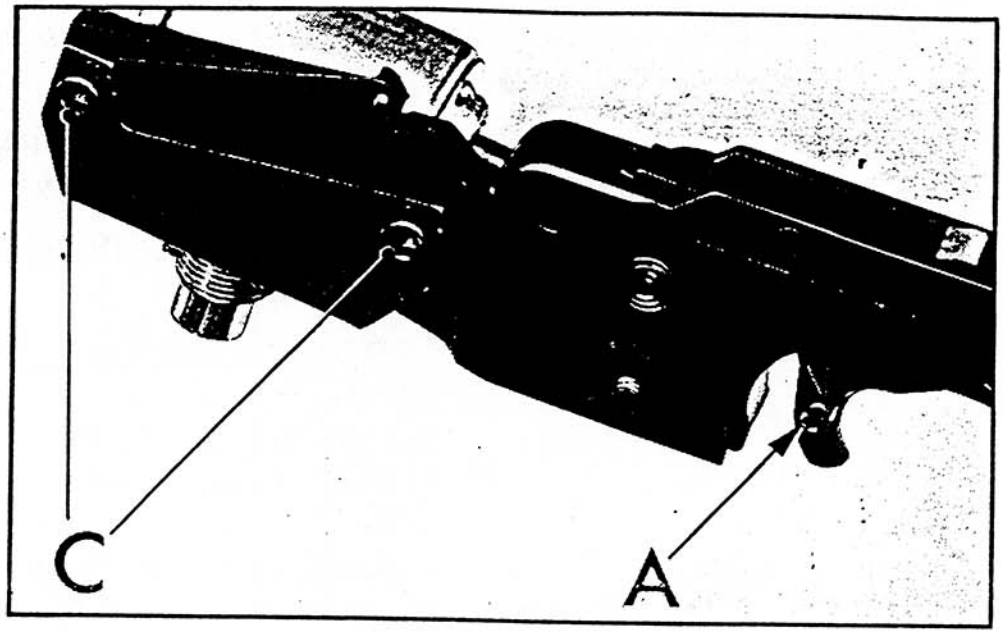


Fig. 85

1300

NUMERICAL FIRING TABLE OF THE AMMUNITION CAL. 7.62 mm NATO

BULLET: BALL SS 77 and A-P BULLET P 80

Temperature: 15 °C Barometric pressure: 750 mm Hg

Range	Angle of elevation	Angle of fall	Remaining velocity	Remaining kinetic energy of bullet SS77	Maximum ordinate		Time of flight
					Height	Horizontal. dist.	
m	mil.	mil.	m/sec	kgm	m	m	sec
0	—	—	840	335	—	—	—
100	0.78	0.80	770	281	0.02	51	0.12
200	1.59	1.81	700	232	0.08	103	0.26
300	2.54	3.10	637	192	0.20	158	0.40
400	3.64	4.77	575	157	0.42	214	0.58
500	4.95	6.85	515	126	0.77	272	0.77
600	6.37	9.66	460	100	1.17	331	0.97
700	8.05	13.40	408	78.6	1.76	393	1.19
800	10.18	17.67	358	60.7	2.68	456	1.46
900	12.80	23.20	328	51.2	3.91	522	1.76
1,000	15.45	29.85	310	45.4	5.46	583	2.09
1,100	19.00	37.84	290	40.5	7.76	648	2.42
1,200	22.70	46.78	276	36.1	10.01	710	2.72
1,300	26.73	57.83	263	32.5	13.20	772	3.15
1,400	31.46	66.74	250	29.7	16.80	831	3.54
1,500	36.50	78.02	239	26.9	20.84	891	3.93
1,600	42.03	90.03	227	24.5	26.09	947	4.37
1,700	47.79	104.22	216	22.1	31.92	1,006	4.83
1,800	54.83	118.47	206	20.2	38.74	1,062	5.31
1,900	61.47	133.94	197	18.4	46.00	1,120	5.81
2,000	69.73	149.32	188	16.7	54.33	1,175	6.36

Remarks:

1. The ballistical coefficients and V_0 of the SS 77 and P 80 bullets are practically the same.
2. The remaining kinetic energies for P 80 bullet are very close to those of the SS 77 bullet, e.g. 350 kgm at 0 m and 17.6 kgm at 2,000 m.

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ARMY TM 9-1005-313-10
MARINE CORPS TM 08670A-10/1A
SUPERSEDES COPY DATED 11 SEPTEMBER 1986

ADVANCE COPY

OPERATOR'S MANUAL FOR
MACHINE GUN, 7.62MM, M240 (1005-01-025-8095)
M240C (1005-01-085-4758)
M240E1 (1005-01-252-4288)

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HEADQUARTERS, DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. MARINE CORPS

WARNING

OBSERVE ALL THE WARNINGS IN THIS MANUAL. THEY CAN SAVE YOUR LIFE.

MAKE SURE THE BARREL IS LOCKED TIGHTLY BEFORE FIRING.

ENSURE THAT ASSIGNED/SPARE BARRELS HAVE BEEN HEADSPACED AND TAGGED TO YOUR RECEIVER. ROTATE USAGE OF THE BARRELS.

DO NOT INTERCHANGE BARREL ASSEMBLY OR BOLT ASSEMBLY FROM ONE MACHINE GUN TO ANOTHER. DOING SO MAY RESULT IN INJURY TO, OR DEATH OF, PERSONNEL.

NEVER RELOAD A RUNAWAY MACHINE GUN UNTIL IT IS REPAIRED. BE SURE MACHINE GUN IS CLEARED BEFORE REMOVING IT FROM VEHICLE.

A HOT BARREL CAN BURN YOU. IF THE BARREL IS HOT, USE YOUR HEAT RESISTANT MITTENS.

STAY CLEAR OF MUZZLE. DO NOT ALLOW ROUND TO HIT ANY HARD SURFACE OR IT MAY FIRE. DISPOSE OF LIVE ROUND IN ACCORDANCE WITH LOCAL REGULATIONS.

USING GASOLINE, KEROSENE, HYDRAULIC OIL, BENZENE, BENSOL, HIGH PRESSURE WATER, STEAM, OR AIR FOR CLEANING IS PROHIBITED.

IF NOTHING IS EJECTED AND YOU HAVE A HOT GUN (200 ROUNDS FIRED WITHIN A 2 MINUTE PERIOD), DO NOT OPEN THE COVER. PLACE SAFETY TO "S," KEEP MACHINE GUN POINTED DOWN RANGE, AND REMAIN AWAY FROM MACHINE GUN FOR 15 MINUTES. AFTER 15 MINUTES, CLEAR YOUR MACHINE GUN.

IF RUNAWAY OCCURS, ALWAYS KEEP MACHINE GUN POINTED DOWN RANGE.

FIRST AID

FOR FURTHER INFORMATION ON FIRST AID, SEE FM 21-11.

***ARMY TM 9-1005-313-10**
MARINE CORPS TM 08670A-10/1A

TECHNICAL MANUAL
ARMY NO. 9-1005-313-10
MARINE CORPS NO. 08670A-10/1A

HEADQUARTERS
DEPARTMENT OF THE ARMY
U.S. MARINE CORPS,
Washington, D.C.

Operator's Manual
MACHINE GUN, 7.62MM, M240 (1005-01-025-8095)
MACHINE GUN, 7.62MM, M240C, (1005-01-085-4758)
AND
MACHINE GUN, 7.62MM, M240E1, (1005-01-252-4288)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000.

Marine Corps users submit NAVMC Form 10772 direct to: Commanding General, Marine Corps Logistics Base (Code 850), Albany, GA 31704-5000.

A reply will be furnished to you.

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*This manual supersedes TM 9-1005-313-10, dated 11 September 1986.

ARMY TM 9-1005-313-10
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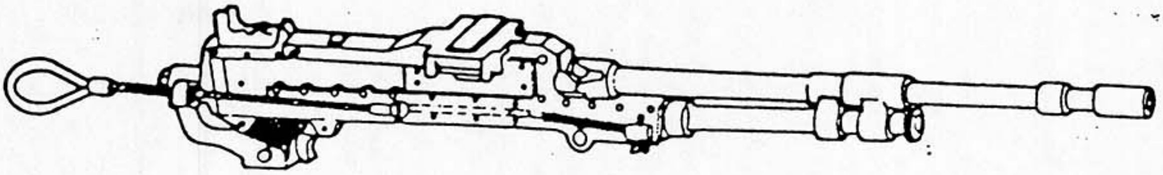
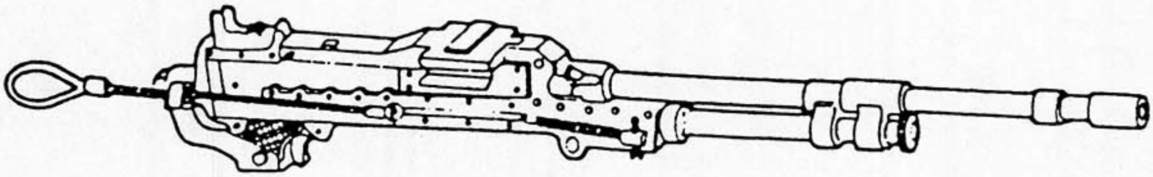
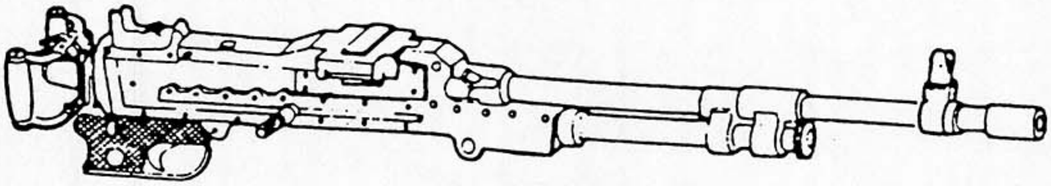


M240



M240C



M240E1

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

SCOPE.

Type of Manual: Operator's Manual.

Model Number and Equipment Name: M240 7.62mm Machine Gun, M240C 7.62mm Machine Gun, and M240E1 7.62mm Machine Gun.

Purpose of Equipment: Designed as coaxial machine gun for tanks and 7.62mm fire power on light armored vehicles (M240/M240C). Designed with front and rear sights, uses 7.62mm ammunition, and spade grip trigger device is turret mounted on light armored vehicles (M240E1).

MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

Marine Corps users will refer to TM 4700.15/1.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your machine gun needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance.

Army users submit an SF 368 (Quality Deficiency Report) and mail it to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC- QAD, Rock Island, IL 61299-6000.

Marine Corps users submit QDR's or SF 368 in accordance with MCO 4855.10 to: Commanding General, Marine Corps Logistics Base (Code 808), Albany, GA 31704-5000.

We'll send you a reply.

WARRANTY INFORMATION. Some machine guns are under warranty. Contact your local Warranty Control Office (WARCO) for warranty information. Point of contact at AMCCOM is AMSMC-QAD-P (AV 793-2421-38).

NOMENCLATURE CROSS REFERENCE LIST.

Common Name	*Official Nomenclature*
Breech Bolt Assembly	Breech Body Assembly Bolt
Buffer and Spade Grip Assembly	Buffer Grip Assembly

CORROSION PREVENTION AND CONTROL (CPC).

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in the future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using SF 368. Use of key words such as "corrosion," "rust," "deterioration" or "cracking" will assure that the information is identified as a CPC problem.

The form should be submitted to: Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAD/Customer Feedback Center, Rock Island, IL 61299-6000.

Section II. EQUIPMENT DESCRIPTION

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

Purpose. Designed as coaxial machine gun for tanks and 7.62mm fire power on light armored vehicles.

Capabilities and Features. The machine gun is gas-operated, mounted on a coaxial mount, and fires from open bolt position. 7.62mm is the authorized round for the machine gun. The M240E1 machine gun has a spade grip and is pintle mounted.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

Barrel assembly (A). Houses cartridge for firing and directs projectile.

Buffer assembly/Buffer and spade grip assembly (B). Absorbs recoil for bolt and operating rod assembly at the end of recoil movement.

Driving spring rod assembly (C). Provides energy for returning bolt and operating rod assembly to firing position.

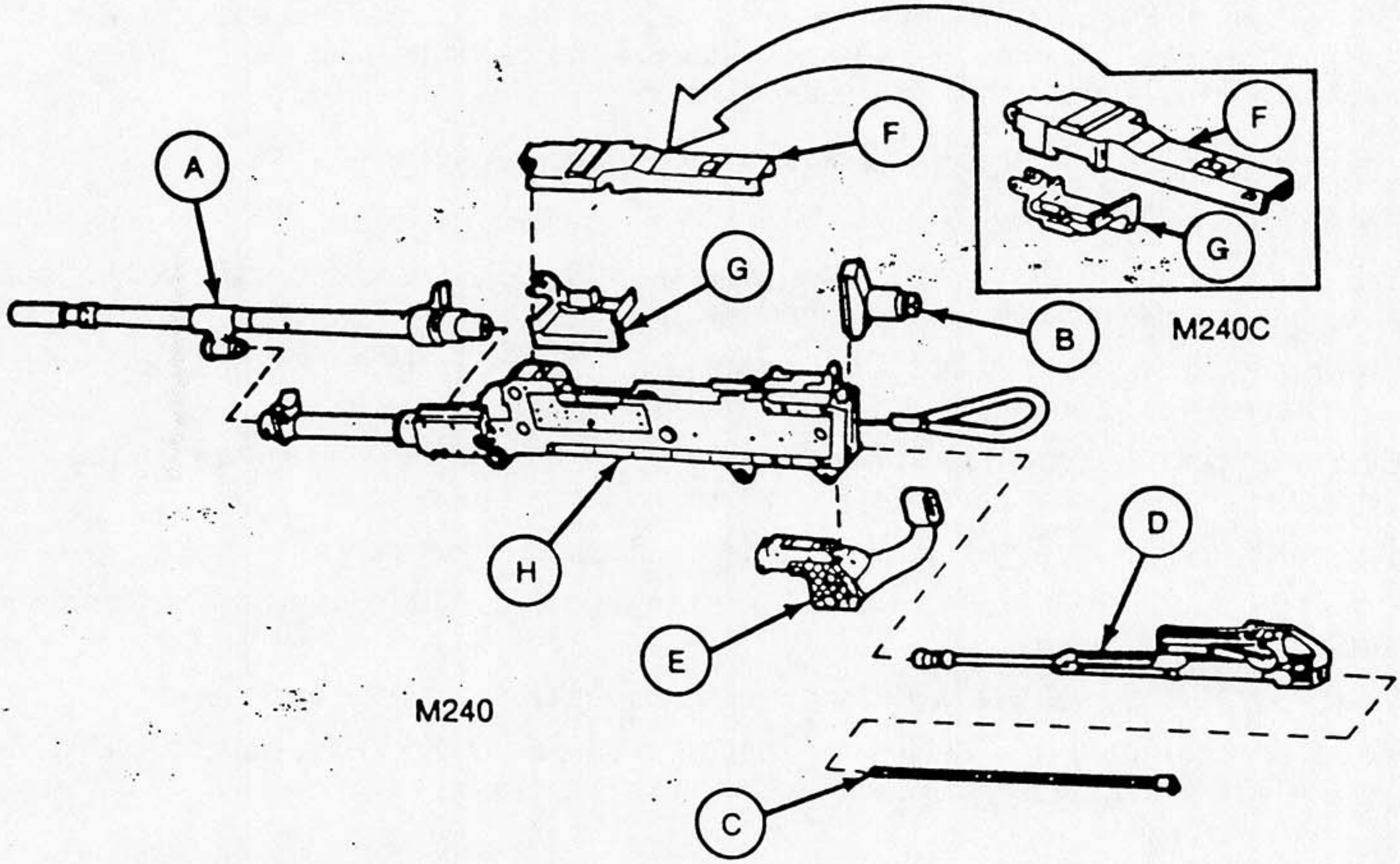
Bolt and operating rod assembly (D). Provides feeding, stripping, chambering, firing, extraction, and ejection of cartridges using the projectile propelling gases for power.

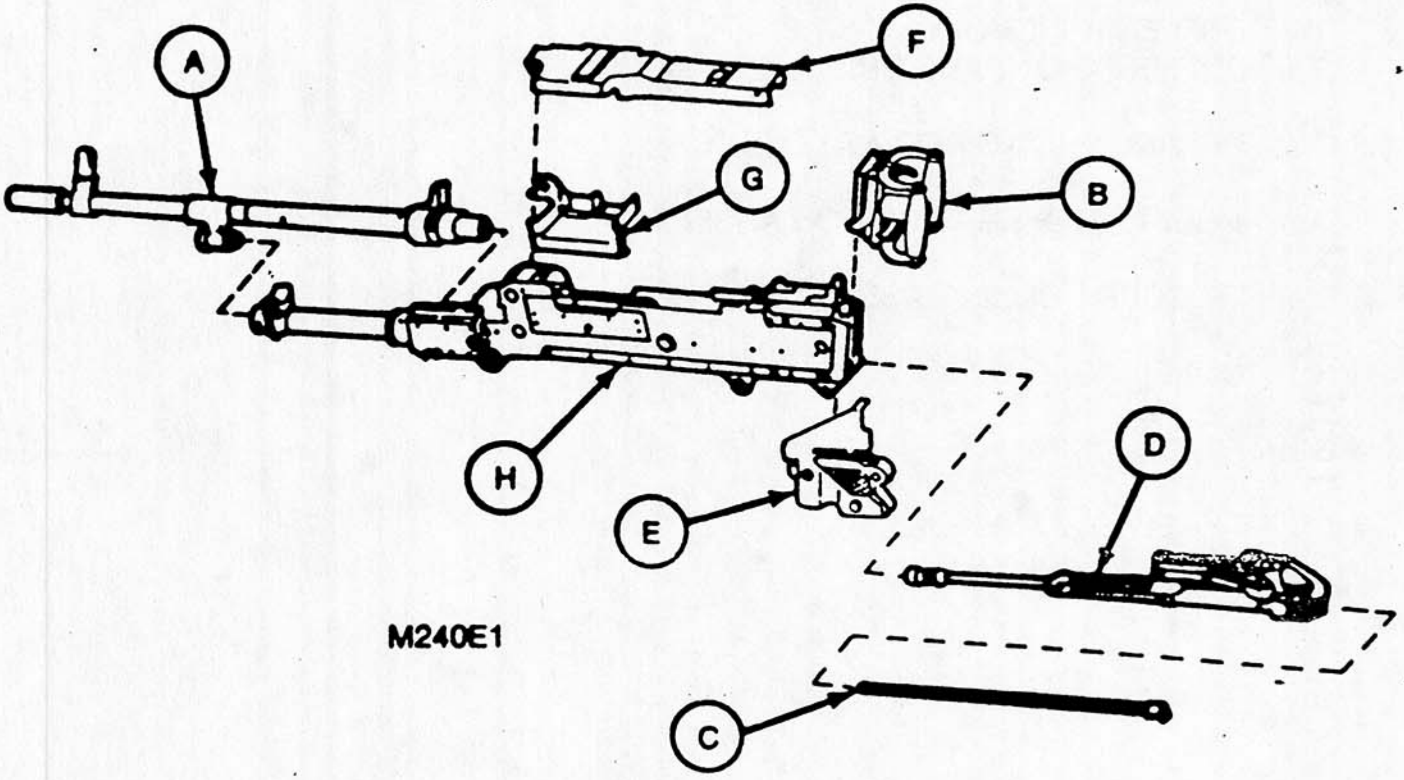
Trigger housing assembly (E). Controls the firing of the machine gun.

Cover assembly (F). Feeds linked belt, positions and holds cartridges in position for stripping, feeding, and chambering.

Feed tray (G). Serves as a guide for positioning cartridges to assist in chambering.

Receiver assembly (H). Serves as a support for all major components. Houses action of weapon and, through a series of cam ways, controls functioning of weapon.


A
B
C
D
E
F
G
H
F
G
M240
M240C



M240E1

Ⓐ	BARREL ASSEMBLY
Ⓑ	BUFFER ASSEMBLY M240/M240C BUFFER AND SPADE GRIP ASSEMBLY M240E1
Ⓒ	DRIVING SPRING ROD ASSEMBLY
Ⓓ	BOLT AND OPERATING ROD ASSEMBLY
Ⓔ	TRIGGER HOUSING ASSEMBLY
Ⓕ	COVER ASSEMBLY
Ⓖ	FEED TRAY
Ⓗ	RECEIVER ASSEMBLY

DIFFERENCES BETWEEN MODELS.

	M240	*M240C*	*M240E1*
Feeds from the right		X	
Feeds from the left	X		X
Cover assembly (11826165)	X		X
Cover assembly (11826038)		X	
Receiver assembly (11826192)	X	X	
Receiver assembly (12597044)			X
Barrel assembly (11825985)	X	X	
Barrel assembly (12597035)			X

	M240	*M240C*	*M240E1*
Trigger assembly (11826230)	X	X	
Trigger assembly (12597070)			X
Buffer assembly (11826211)	X	X	
Buffer and spade grip assembly (12597057)			X
Charger cable (11826145)	X	X	
Manual control handle (12597045)			X

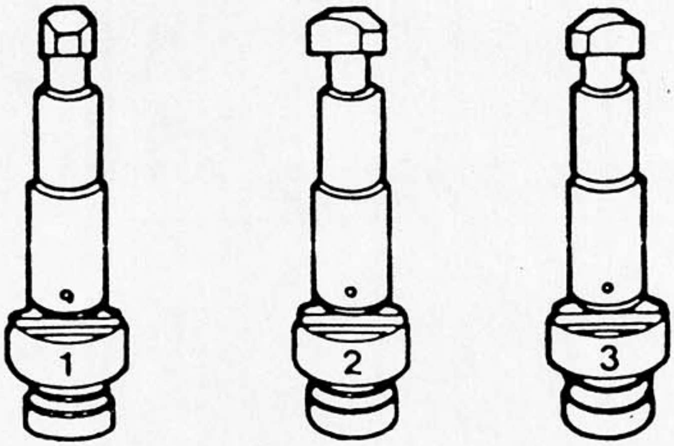
Procedures are written for the M240 machine gun but apply to all three models except where noted.

EQUIPMENT DATA.

Weight:	10.3 Kg (22.2 lb)
Rate of fire	You get the sustained and rapid rates through practice.
Cyclic	650 to 950 RDS/M - Change barrel every minute.
Sustained	100 RDS/M (4-5 sec between bursts) - Change barrel every 10 minutes.
Rapid	200 RDS/M (2-3 sec between bursts) - Change barrel every 2 minutes.
Range:	
Maximum	3,725 meters
Maximum effective range	Tracer burnout approximately 900 meters.

Section III. TECHNICAL PRINCIPLES OF OPERATION

FACTS ABOUT YOUR MACHINE GUN. The barrel is air-cooled and has an established headspace allowing quick changes for cooling and maintenance when required. The rate of fire is controlled by 3 regulator settings (setting #1 preferred). Settings #2 and #3 are used when carbon buildup, cold weather, and dusty conditions reduce the firing rate. Bolt design permits the cover to be opened or closed, regardless of bolt position, without damage.



REGULATOR SETTINGS

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

GENERAL.

Always keep in mind the WARNINGS and CAUTIONS before and during operation. Be sure to perform your after (A) PMCS.

Perform BEFORE PMCS if: (1) you are the assigned operator and the machine gun has been stored and not used for a period of 90 days, or (2) you have been issued the machine gun for the first time.

a. *BEFORE (B).* Checks and services performed prior to the equipment leaving its containment area or performing its intended mission.

b. *DURING (D).* Checks begin when the equipment is being used in its intended mission.

c. *AFTER (A).* Checks and services begin when the equipment is taken out of its mission mode or returned to its containment area.

PMCS PROCEDURES.

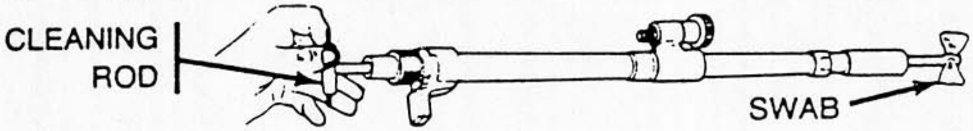
Your PMCS table lists inspections and care required to keep your machine gun in good operating condition.

The interval column tells you when and the procedure column tells you how to do a certain check or service. The "Equipment is NOT READY/AVAILABLE IF" column indicates problems which must be corrected before you can operate the machine gun. The terms "ready/available" and "mission capable" refer to the same status: equipment is on hand and is able to perform its combat missions (see DA PAM 738-750).

If your machine gun does not perform as required, refer to Troubleshooting in Chapter 3 for possible malfunctions and corrective actions. Report malfunctions on proper DA Form 2404 or refer to DA PAM 738-750.

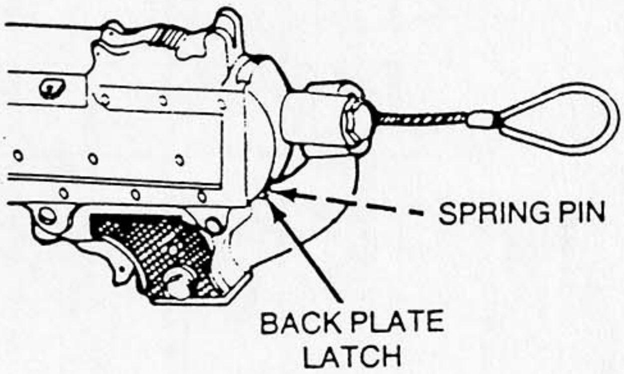
PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - Before D - During A - After

Item No.	Interval			Item To Be Inspected Procedure	Equipment is NOT READY/AVAILABLE IF:
	B	D	A		
				WARNING DO NOT INTERCHANGE BARREL ASSEMBLY OR BOLT ASSEMBLY FROM ONE MACHINE GUN TO ANOTHER. DOING SO MAY RESULT IN INJURY TO, OR DEATH OF, PERSONNEL. ENSURE THAT ASSIGNED/SPARE BARRELS HAVE BEEN HEADSPACED AND TAGGED TO YOUR RECEIVER. ROTATE USAGE OF THE BARRELS.	
1	●			**Barrel Assemblies.** Remove barrel (p 3-21) and check bore and chamber. Using cleaning rod and swab (item 6, app D), remove oil, foreign material, or obstructions. Install and lock barrel securely in receiver (p 3-~~54~~55). (Spare barrel must also be checked and cleaned before use.) 	Obstruction in barrel cannot be removed or barrel will not lock securely in receiver.

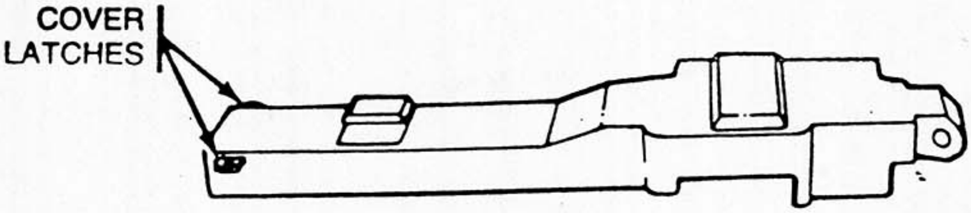
PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONT

B - Before D - During A - After

Item No.	Interval			Item To Be Inspected Procedure	Equipment is NOT READY/AVAILABLE IF:
	B	D	A		
2	●			**Buffer Assembly.** Make sure back plate latch is locked. **NOTE** Ensure spring pin is in place.  	Latch will not hold buffer assembly in receiver.

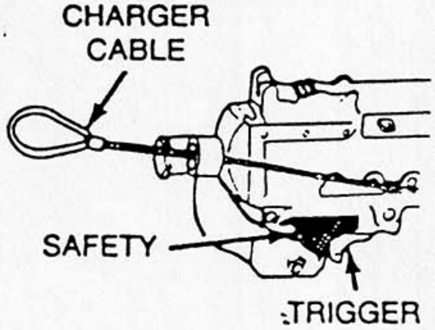
PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONT

B - Before D - During A - After

<table>
<tr><th rowspan="2">Item No.</th><th colspan="3">Interval</th><th rowspan="2">Item To Be Inspected
Procedure</th><th rowspan="2">Equipment is NOT READY/AVAILABLE IF:</th></tr>
<tr><th>B</th><th>D</th><th>A</th></tr>
<tr><td>3</td><td>●</td><td></td><td></td><td>Cover Assembly. Squeeze cover latches and raise cover. Let go of latches and close cover. Make sure latches hold cover shut.

 </td><td>Latches fail to hold cover shut.</td></tr>
</table>

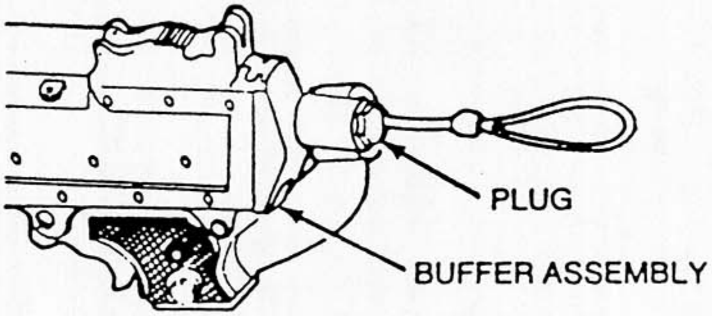
PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONT

B - Before D - During A - After

Item No.	Interval			Item To Be Inspected Procedure	Equipment is NOT READY/AVAILABLE IF:
	B	D	A		
				NOTE The charger cable is on the M240 and M240C models only. The M240E1 model has a manual control handle. Weapon will not go on safe (S) with bolt assembly in the forward position.	
4	●			**Charger Cable, Safety, and Bolt Assembly.** Pull charger cable to rear to make sure bolt assembly moves freely without binding and locks to the rear. Place safety to safe (S) and pull trigger. Bolt assembly should not move forward. Place safety to fire (F). Keep hold of charger cable and pull trigger. Let bolt assembly return to forward position slowly. 	Bolt assembly binds in receiver or fails to lock in rear position. Bolt assembly moves forward with safety on "S."

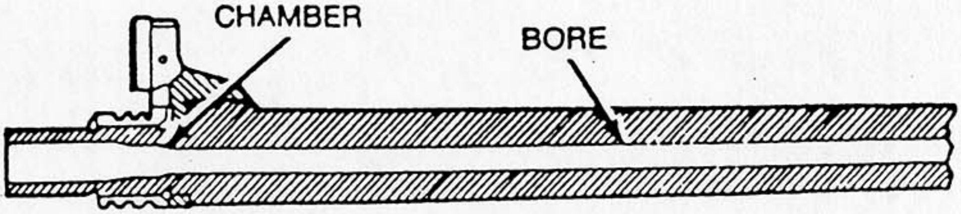
PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONT

B - Before D - During A - After

Item No.	Interval			Item To Be Inspected Procedure	Equipment is NOT READY/AVAILABLE IF:
	B	D	A		
5		•		**Machine Gun (Firing Cycle).** Note machine gun firing rate. If firing cycle slows down or becomes sluggish, clean and oil machine gun. Notify unit maintenance as soon as possible if machine gun does not function properly.	
		•		**Buffer Assembly.** If plug becomes loose on buffer assembly, machine gun must be returned to unit maintenance to ensure proper assembly. 	

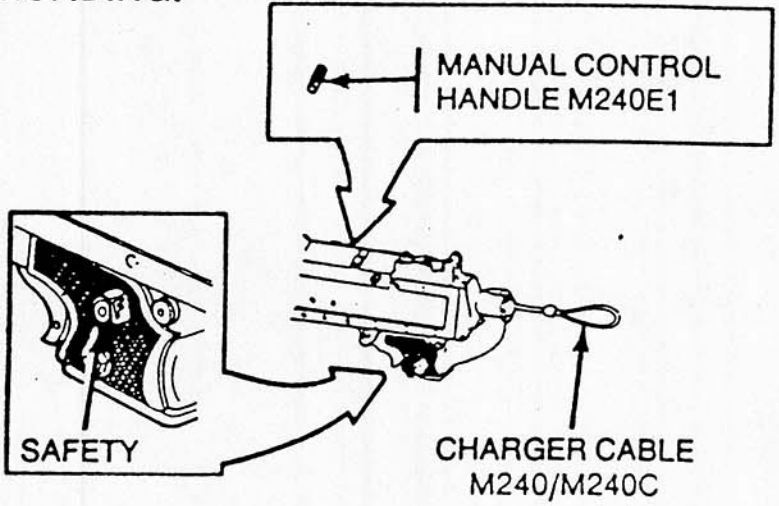
PREVENTIVE MAINTENANCE CHECKS AND SERVICES - CONT

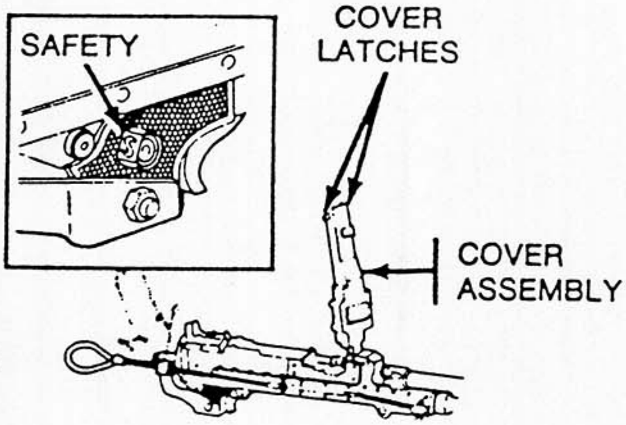
B - Before D - During A - After

Item No.	Interval			Item To Be Inspected Procedure	Equipment is NOT READY/AVAILABLE IF:
	B	D	A		
6			●	**Barrel Assemblies.** Clear gun (p 2-11). Check chamber and bore for obstructions. 	
7			●	**Machine Gun.** Disassemble, clean, inspect, lubricate, and reassemble machine gun (p 3-21 thru 3-~~56)~~. 58	Any part is broken, missing, or damaged to the extent that it could cause gun to malfunction.

Section II. OPERATION UNDER USUAL CONDITIONS

LOADING.





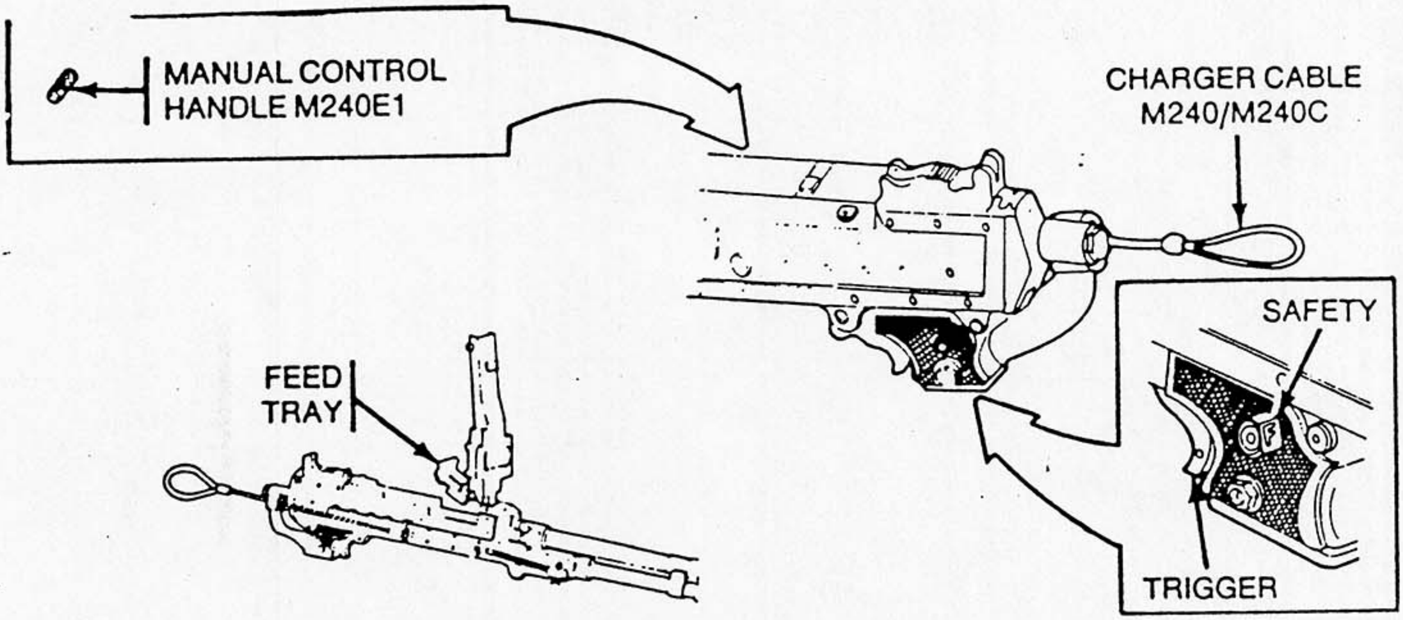
1 Place safety to "F."

2 Pull charger cable to rear (M240 and M240C only). For M240E1, pull manual control handle to the rear.

3 Place safety to "S."

4 Push in latches to open cover assembly.

5 Remove any ammunition (ammo), if present.



6 Raise feed tray.

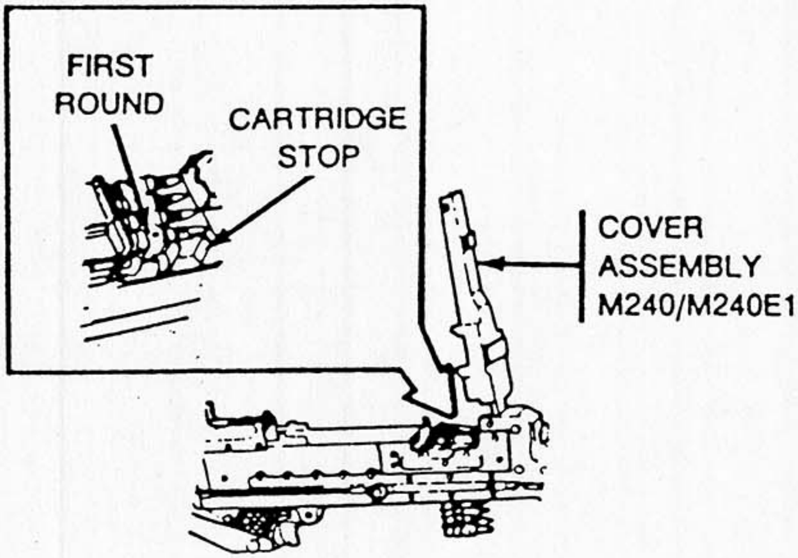
7 Look into chamber to make sure no round is chambered.

8 Lower feed tray.

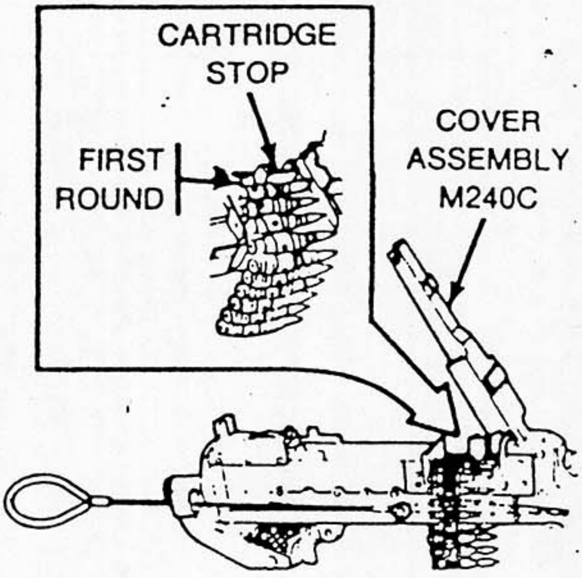
9 Place safety to "F."

10 Hold charger cable (M240/M240C) or manual control handle (M240E1) to rear, squeeze trigger, and ease bolt forward to close and lock.

LOADING - CONT.



M240/M240E1



M240C

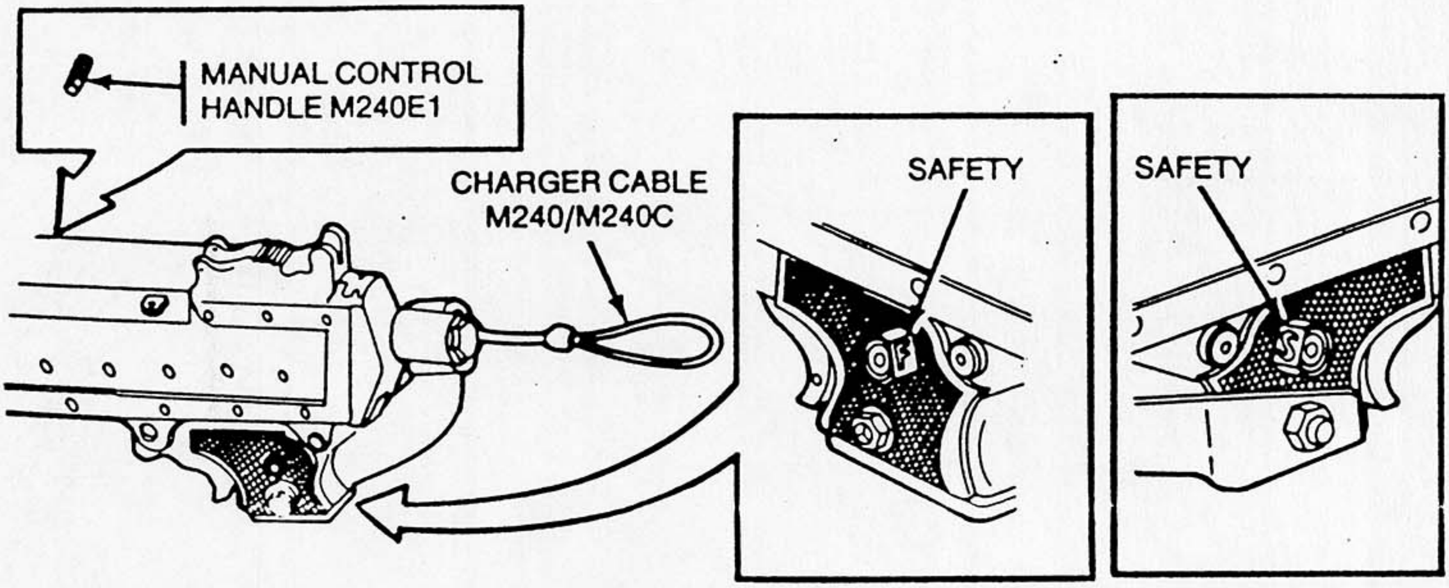
NOTE

Position open side of links down.

11 Place link belt in feed tray with first round against cartridge stop.

12 Close cover assembly. Make sure it locks shut.

CLEARING.

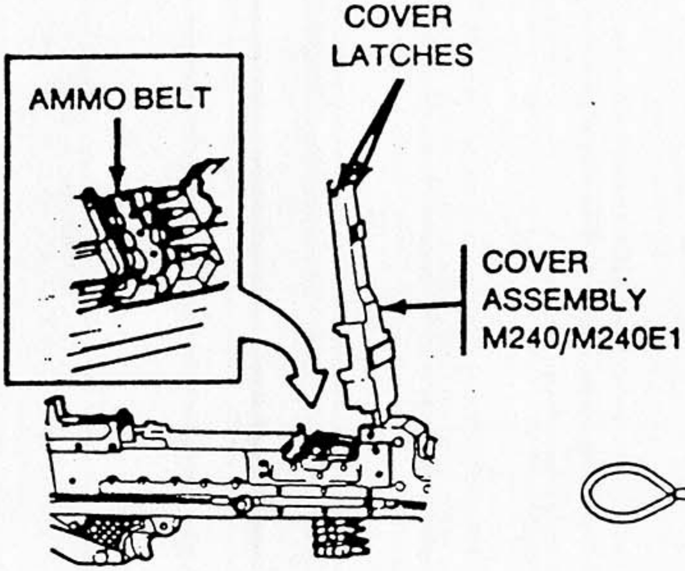


1 Place safety to "F."

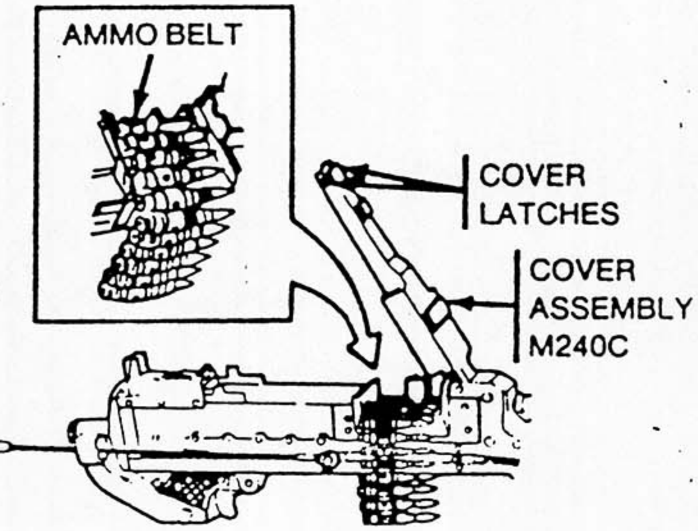
2 Pull charger cable (M240 and M240C) or manual control handle (M240E1) to rear to lock bolt back.

3 Place safety to "S."

CLEARING - CONT.



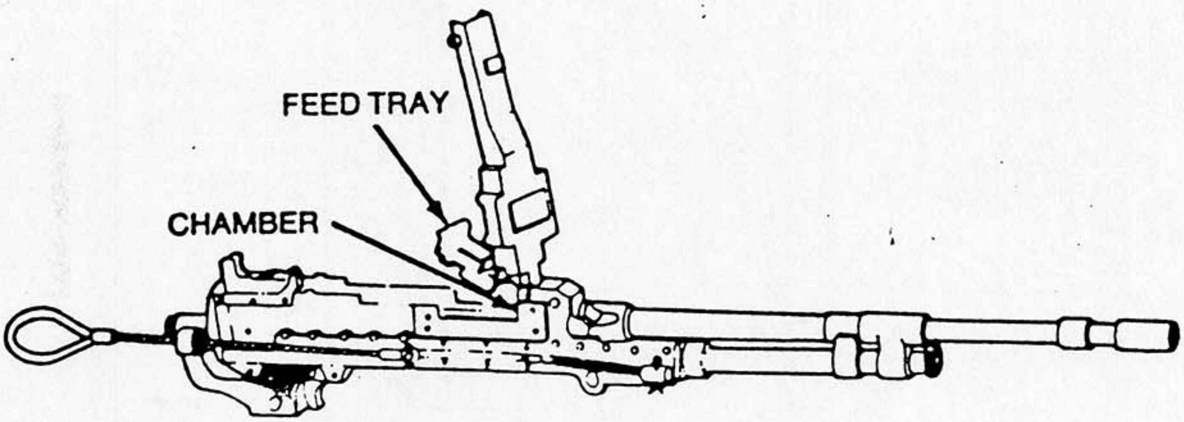
M240/M240E1



M240C

4 Push in latches to open cover assembly.

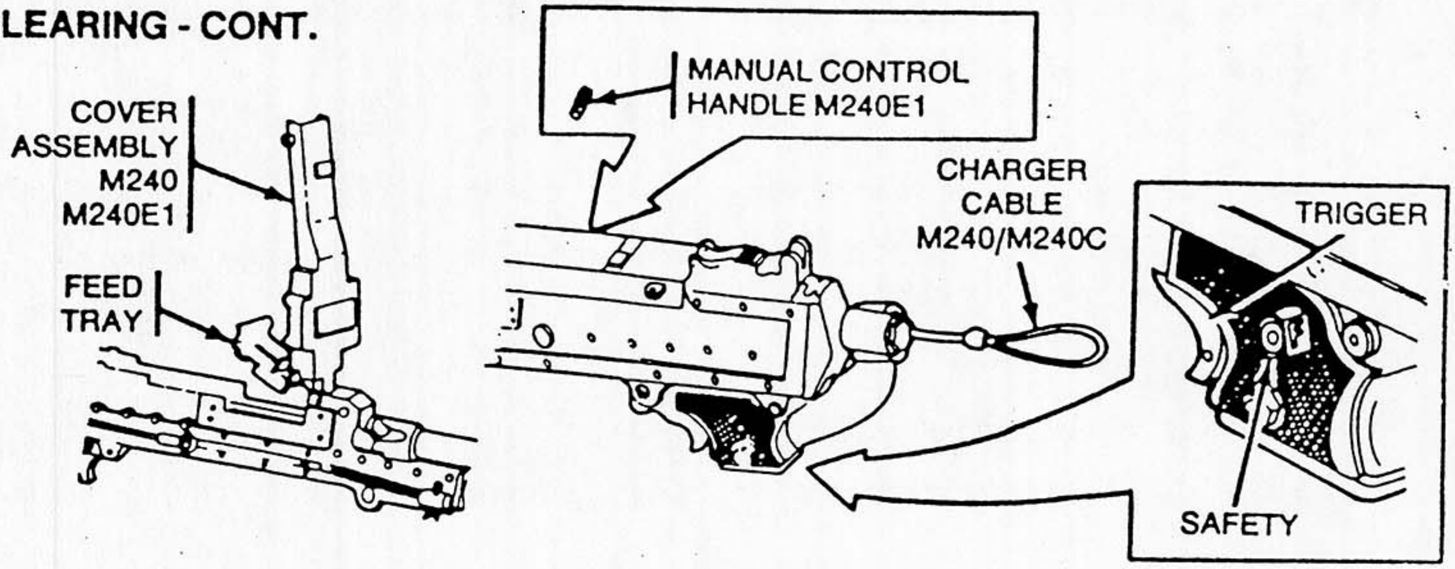
5 Remove ammo belt.



6 Raise feed tray.

7 Look into chamber to make sure it is empty. If a round is still in the chamber, remove it.

CLEARING - CONT.



8 Lower feed tray.

9 Place safety to "F."

10 Hold charger cable (M240/M240C) or manual control handle (M240E1) to rear, depress trigger, and ease bolt forward to close and lock.

11 Close cover assembly. Make sure it locks shut.

NOTE

Be sure bolt is forward with safety in "F" (fire position) when gun is not in use.

IMMEDIATE ACTION.

STOPPAGE, IMMEDIATE ACTIONS, COOK-OFF, AND HOT OR COLD GUN DEFINITIONS.

1 Stoppage - Any interruption in the cycle of operation of the gun.

2 Immediate action - Prompt actions taken by the crew to overcome a stoppage.

3 Cook off - Functioning of a chambered round of ammunition due to the heat of the weapon.

4 Hot or cold gun - This is a peacetime classification only. The gun will classed as a hot or cold gun only in the interest of safety.

CLASSIFICATION OF HOT GUN.

1 More than 200 rounds fired within a 2 minute period.

2 A long continuous burst or repeated firing of the weapon even though you do not reach 200 rounds in 2 minutes.

3 Less than 15 minutes have lapsed without a round being fired from a hot gun.

4 If the Tank Commander (TC) for any reason decides the weapon is hot.

IMMEDIATE ACTION FOR A HOT GUN.

WARNING

IF NOTHING IS EJECTED AND YOU HAVE A HOT GUN (200 ROUNDS FIRED WITHIN A 2 MINUTE PERIOD), DO NOT OPEN THE COVER. PLACE SAFETY TO "S," KEEP MACHINE GUN POINTED DOWN RANGE, AND REMAIN AWAY FROM MACHINE GUN FOR 15 MINUTES. AFTER 15 MINUTES, CLEAR YOUR MACHINE GUN (P 2-11).

M240 and M240E1 only

1 Charge the weapon.

2 Attempt to fire.

3 If the gun does not fire, leave it alone, pointed down range for 15 minutes. Then treat it as a cold gun and clear.

M240C only

1 Keep away from machine gun for 15 minutes until cool.

2 Charge the weapon.

3 Attempt to fire.

4 If machine gun does not fire, clear weapon and check the gun.

IMMEDIATE ACTION FOR A COLD GUN.

1 Charge the weapon.

2 Attempt to fire.

3 If the gun does not fire, clear weapon and check gun.

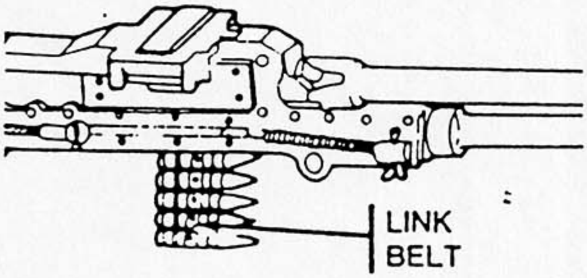
RUNAWAY MACHINE GUN

If runaway occurs (machine gun won't stop firing), take action to correct it quickly.

WARNING

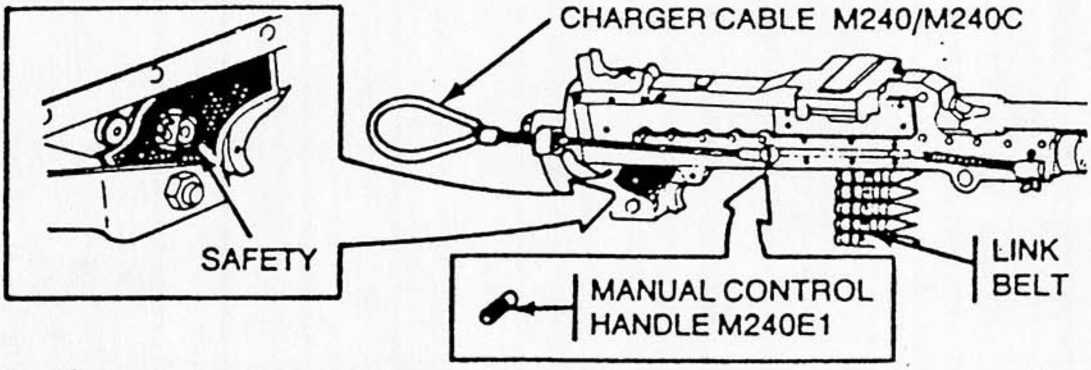
ALWAYS KEEP MACHINE GUN POINTED DOWN RANGE.

Then apply any of the 3 actions below to stop the runaway:



1 Break link belt (grasp belt and twist it firmly).

RUNAWAY MACHINE GUN - CONT.



2 Grab charger cable (M240 and M240C) or manual control handle (M240E1), pull all the way back and hold. Place safety to "S" and remove link belt.

3 Let machine gun fire if near end of link belt.

WARNING

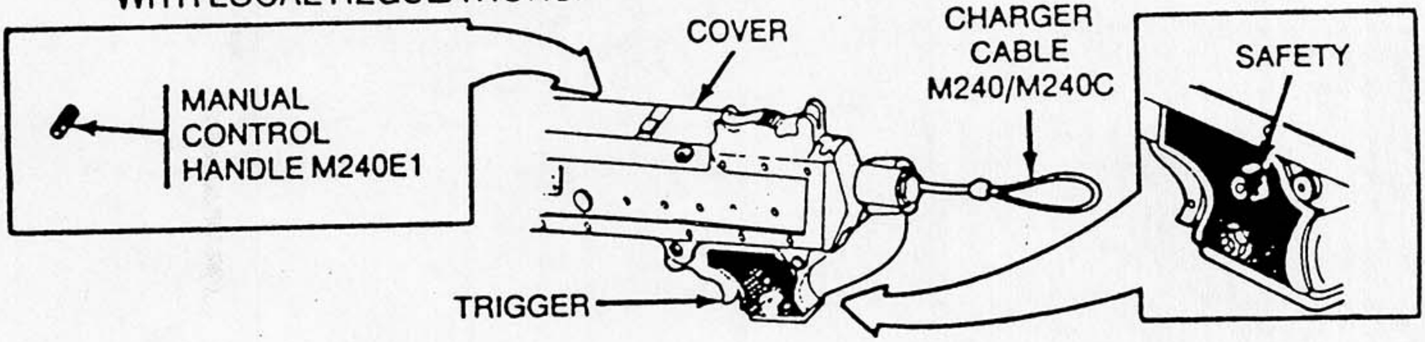
NEVER RELOAD A RUNAWAY MACHINE GUN UNTIL IT IS REPAIRED. BE SURE MACHINE GUN IS CLEARED BEFORE REMOVING IT FROM VEHICLE.

4 Notify unit maintenance for repairs.

STUCK CARTRIDGE CASE OR LIVE ROUND.

WARNING

STAY CLEAR OF MUZZLE. DO NOT ALLOW ROUND TO HIT ANY HARD SURFACE OR IT MAY FIRE. DISPOSE OF LIVE ROUND IN ACCORDANCE WITH LOCAL REGULATIONS.



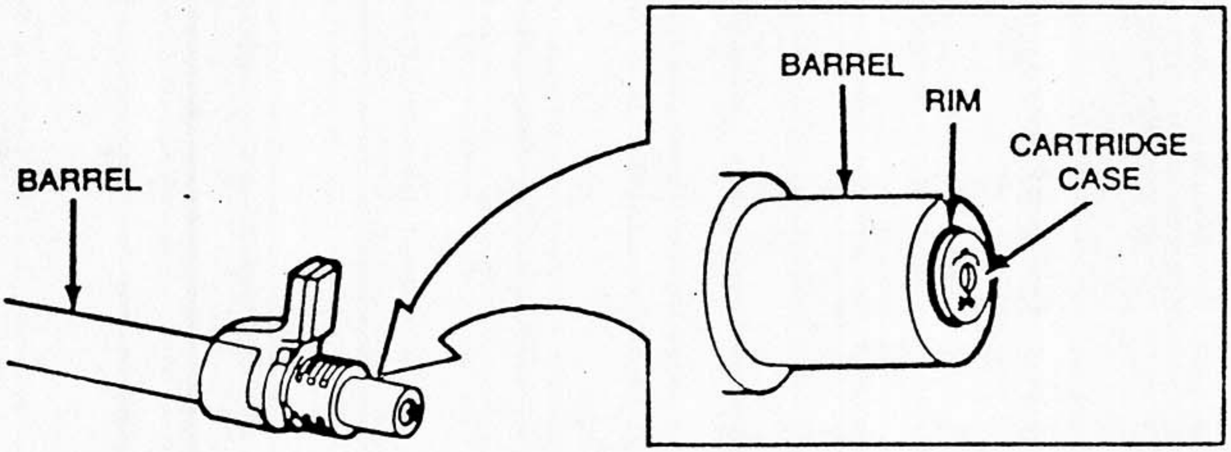
If it did fire and didn't extract, you have a stuck cartridge case. If it didn't fire and didn't extract, you have a stuck live round.

1 Close cover.

2 Place safety to "F."

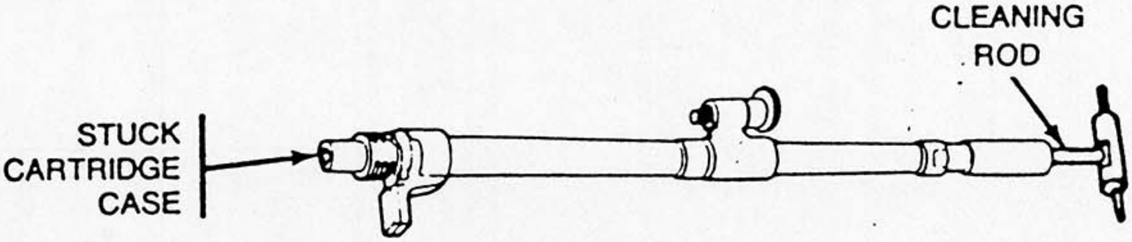
3 Hold charger cable (M240/M240C) or manual control handle (M240E1) to the rear, squeeze trigger, and slowly ease bolt forward.

STUCK CARTRIDGE CASE OR LIVE ROUND - CONT.

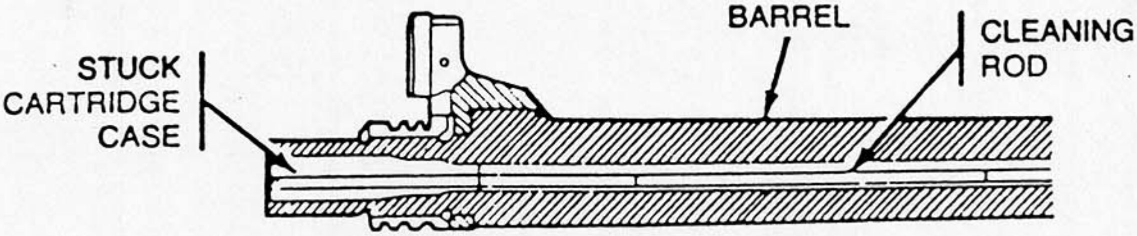


4 Wait until barrel is cool; remove barrel (p 3-21, steps 2 and 3, and p 3-22, step 4), and lift cartridge case from chamber of barrel, or pry rim (if case is tight).

ALTERNATE METHOD.



1 Remove swab holder section from cleaning rod and insert cleaning rod through muzzle end of barrel.



2 Push threaded end of extractor post through ruptured case. Pull on handle to remove case with weapon in mounted position.

RUPTURED CARTRIDGE CASE.

If it fired and blew the back off the case, you have a ruptured cartridge.

1 Charge weapon (p 2-11, steps 1 thru 3, p 2-12, step 4).

2 Place safety to "F."

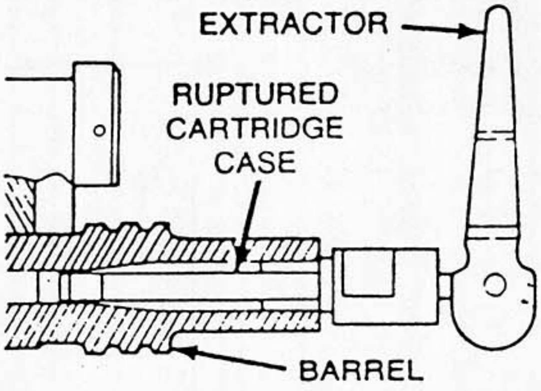
3 Hold charger cable (M240 and M240C) or manual control handle (M240E1) to the rear, press trigger and ease bolt forward until it stops.

4 Remove barrel (p 3-21, steps 2 and 3, p 3-22, step 4).

5 Push threaded end of extractor post through ruptured case. Pull on handle to remove case.

NOTE

In the event a live round is fed into a ruptured case, remove live round first (p 2-19), then remove ruptured cartridge case.



Section III. OPERATION UNDER UNUSUAL CONDITIONS

Under unusual conditions, clean and lubricate machine gun more often.

HOT, DUSTY, AND SANDY AREAS. Clean often. Wipe oil from exposed surfaces with clean wiping rag (item 5, app D). Cover weapon as much as possible to keep dust and sand out of parts.

HOT, WET CLIMATE. Inspect often. Dry, clean, and lubricate lightly as necessary.

EXTREMELY COLD CLIMATE. Keep free of moisture. Lightly oil with LAW (item 3, app D).

AFTER EXPOSURE TO WATER. Disassemble, clean, oil and reassemble as soon as possible. Make sure it's dry.

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION. Decontamination procedures can be found in FM 3-5.

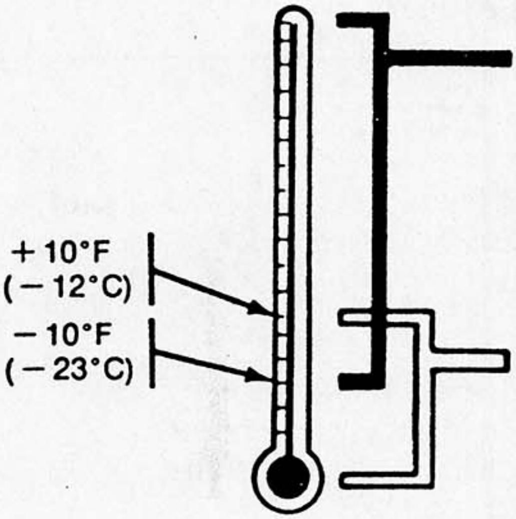
CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

LUBE GUIDE. Under all but the coldest arctic conditions, LSA (item 4, app D) or CLP (item 1, app D) are the lubricants to use on your machine gun. Remember to remove excessive oil from the bore before firing.

NOTE

Lubrication instructions are mandatory. Do not mix lubricants on the same weapon. The weapon must be thoroughly cleaned during change from one lubricant to another. Dry cleaning solvent (available to unit maintenance) is recommended for cleaning during change from one lubricant to another.



CLP - Cleaner, lubricant and preservative (item 1, app D).

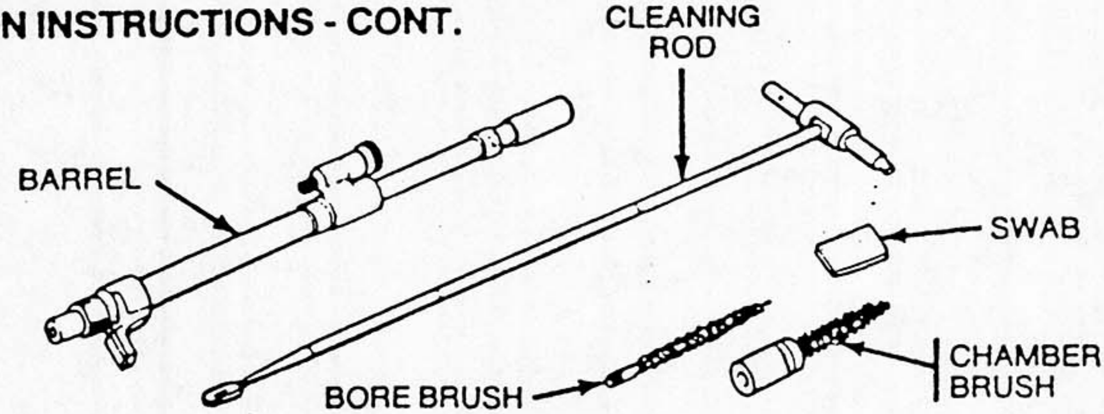
LSA - Weapons lubricating oil, semifluid (item 4, app D).

Between 10°F (−12°C) and −10°F (−23°C) use CLP, LSA or LAW. Below −10°F (−23°C) use only LAW.

LAW - Weapons lubricating oil, arctic (item 3, app D).

Lightly Lube - A film of oil barely visible to the eye.

LUBRICATION INSTRUCTIONS - CONT.



1 After firing, field-strip your machine gun (p 3-21). Clean bore and chamber with cleaning rod, chamber brush, bore brush, and swab (item 6, app D) soaked with RBC (item 2, app D) or CLP (item 1, app D) until a clean swab can be run through the bore without getting dirty.

2 Clean powder-fouled parts, except the buffer, with a wiping rag (item 5, app D) dampened with RBC (item 2, app D) or CLP (item 1, app D).

3 Wipe dry and lube as required. Inspect and run a lightly oiled swab (item 6, app D) through the bore and chamber (p 3-36).

4 If your machine gun isn't used, it still needs complete cleaning and lubing at least every 90 days. (Unusual conditions could shorten this interval.)

Section II. TROUBLESHOOTING PROCEDURES

INTRODUCTORY INFORMATION.

The table lists the common malfunctions which you may find during the operation or maintenance of the machine gun or its components. You should perform the tests/inspections and corrective actions in the order listed.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify unit maintenance.

NOTE

Troubleshooting procedure is written for one machine gun but applies to all three.

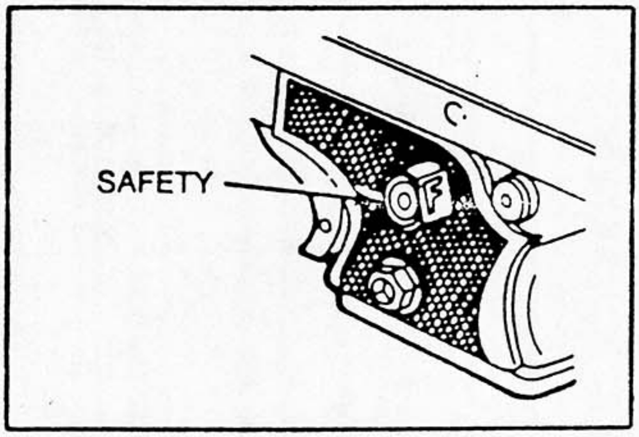
TROUBLESHOOTING TABLE

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

---

1. FAILS TO FIRE ON INITIAL BURST.

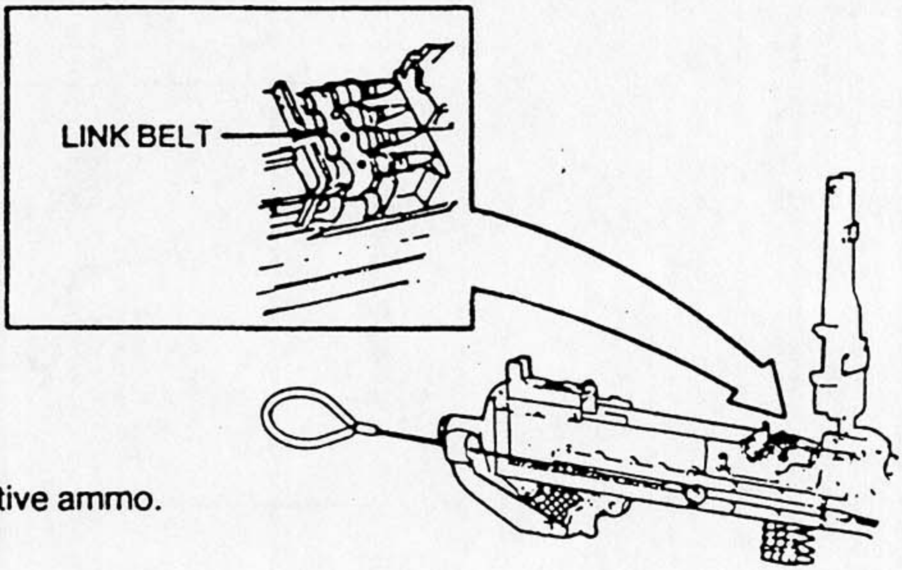
Step 1. Check for safety in "S" position.
Move safety to "F."



TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 2. Check that link belt is improperly loaded.
Remove and reinstall link belt properly (p 2-10).



Step 3. Check for defective ammo.
Eject round.

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

---

2. FAILURE TO FEED.

Step 1. Inspect for proper lubrication.
Lube as required (p 3-0).

Step 2. Check for defective ammo or links.
Remove defective ammo/links; install new ammo/links.

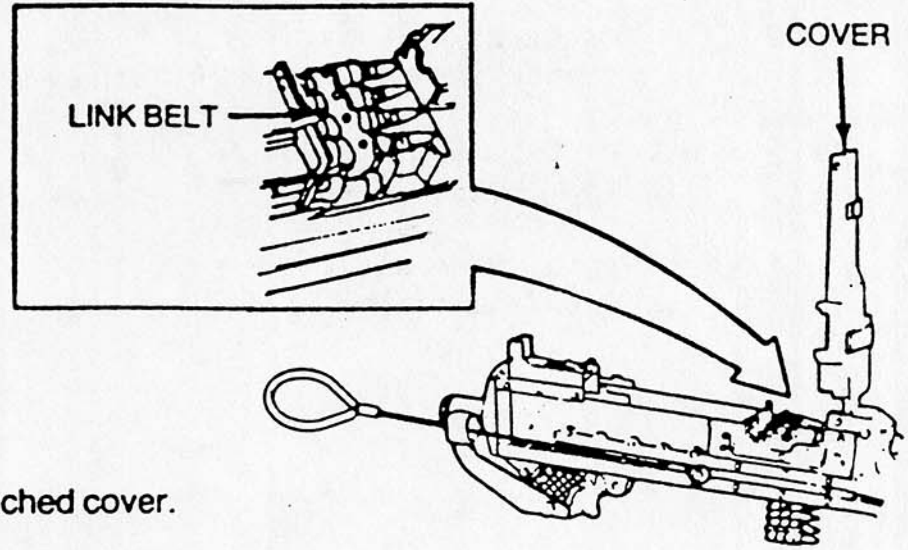
Step 3. Check for obstruction in receiver.
Remove obstruction.

Step 4. Check for insufficient gas pressure.
Notify unit maintenance.

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 5. Check for long/short rounds.
Aline rounds in link belt.



Step 6. Check for an unlatched cover.
Latch cover.

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

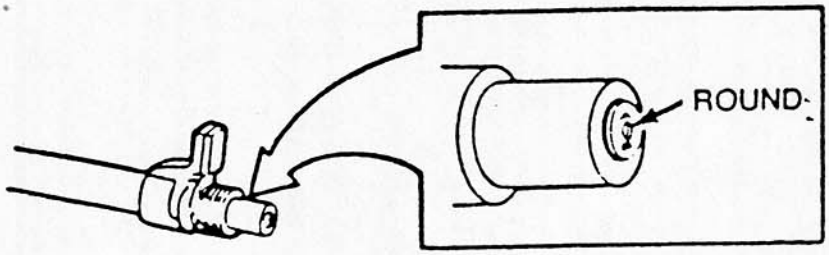
2. FAILURE TO FEED - continued

Step 7. Inspect for damaged, weak, or worn operating parts.
Notify unit maintenance.

Step 8. Check for inverted link belt.
Reinstall feed belt with open end of link facing down (p 2-10).

3. STOPS FIRING.

Step 1. Check for defective round in chamber.
Eject round.

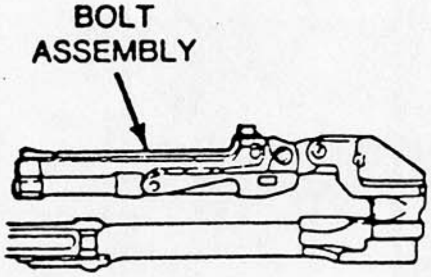


TROUBLESHOOTING TABLE - CONT

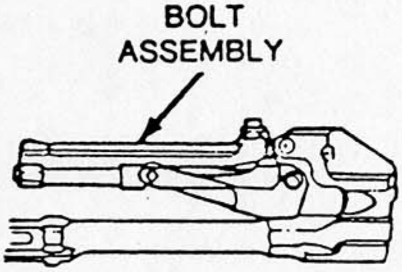
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 2. Check that bolt assembly is fully forward and locked.

Remove obstruction or clean and lubricate as required (p 3-44).



UNLOCKED



LOCKED

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

---

3. STOPS FIRING - continued

Step 3. Check for unfired round with dented primer.
Eject round. Notify unit maintenance.

Step 4. Check for sticking feed mechanism.
Clean and lubricate feed mechanism (p 3-40). If problems still exist, notify unit maintenance.

Step 5. Check for short recoil.
Clean and lubricate bolt and operating rod assembly (p 3-44) If problems still exist, notify unit maintenance.

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

---

4. SLUGGISH OPERATION.

Step 1. Check for dirty receiver.
Clean and lubricate (p 3-50).

Step 2. Inspect for sufficient lubricant.
Lubricate (p 3-0).

5. DOUBLE FEED.

Step 1. Check for dirty ammo or chamber.
Wipe ammo off with a clean, dry rag (item 5, app D), or clean chamber (p 3-34).

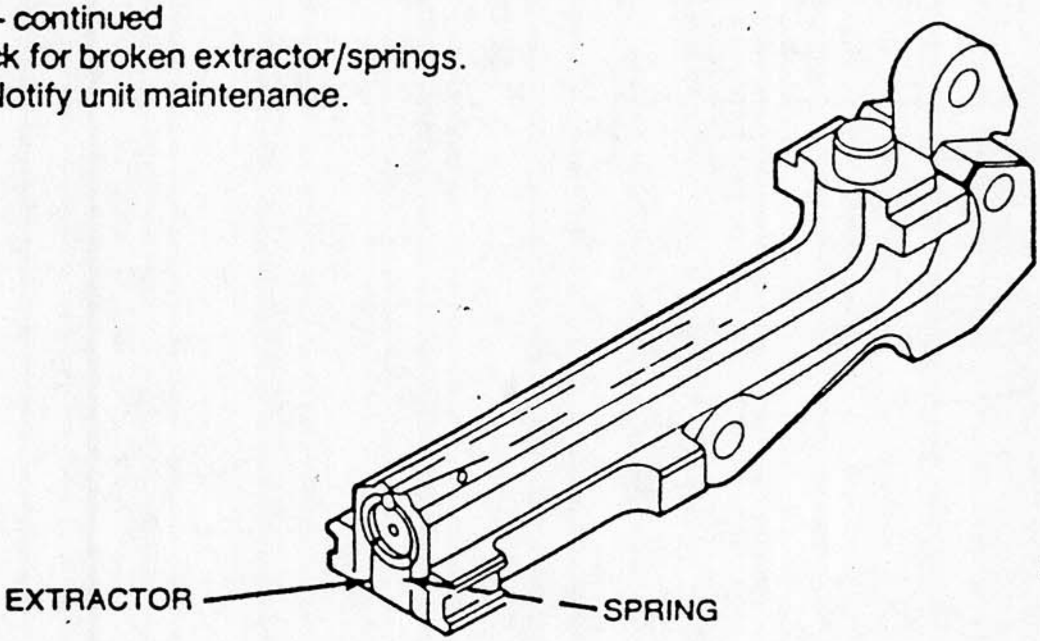
TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. DOUBLE FEED - continued

Step 2. Check for broken extractor/springs.

Notify unit maintenance.



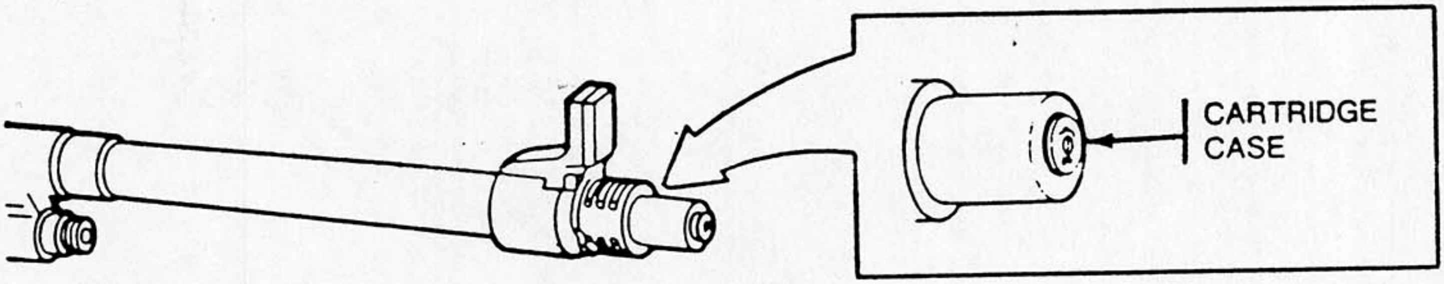
TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. FAILURE TO CHAMBER.

Step 1. Check for stuck/ruptured cartridge case.

Remove cartridge (p 2-19 or p 2-22).



Step 2. Check for dirty ammunition.

Wipe ammo off with a clean, dry rag (item 5, app D).

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
  TEST OR INSPECTION
    CORRECTIVE ACTION

---

6. FAILURE TO CHAMBER - continued

Step 3. Inspect gas cylinder for carbon buildup.
If carbon buildup is present, clean gas cylinder (p 3-47).

Step 4. Inspect receiver for carbon buildup.
Clean receiver if necessary (p 3- 50).

Step 5. Check for damaged round.
Remove round and recharge weapon.

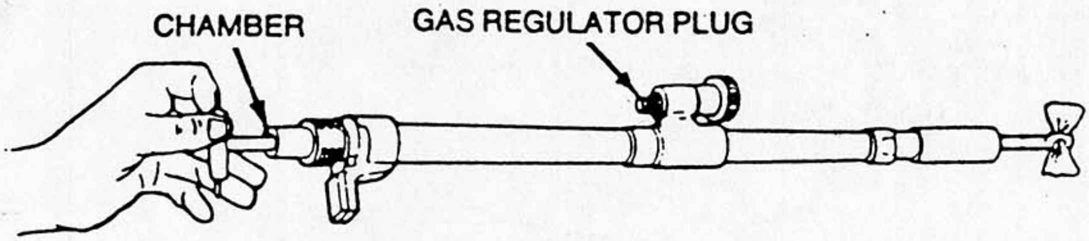
Step 6. Check for damaged or weak driving spring.
Notify unit maintenance.

TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 7. Inspect chamber for dirt.
Clean chamber (p 3-34).

Step 8. Check for a damaged gas regulator plug.
Notify unit maintenance.



TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

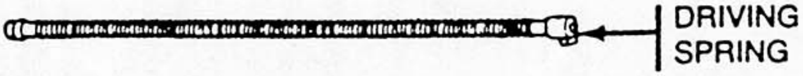
---

7. FAILURE TO FIRE.

Step 1. Check for faulty ammo.
Replace ammo.

Step 2. Check for broken or damaged firing pin.
Notify unit maintenance.

Step 3. Check for broken or weak driving spring.
Notify unit maintenance.



TROUBLESHOOTING TABLE - CONT

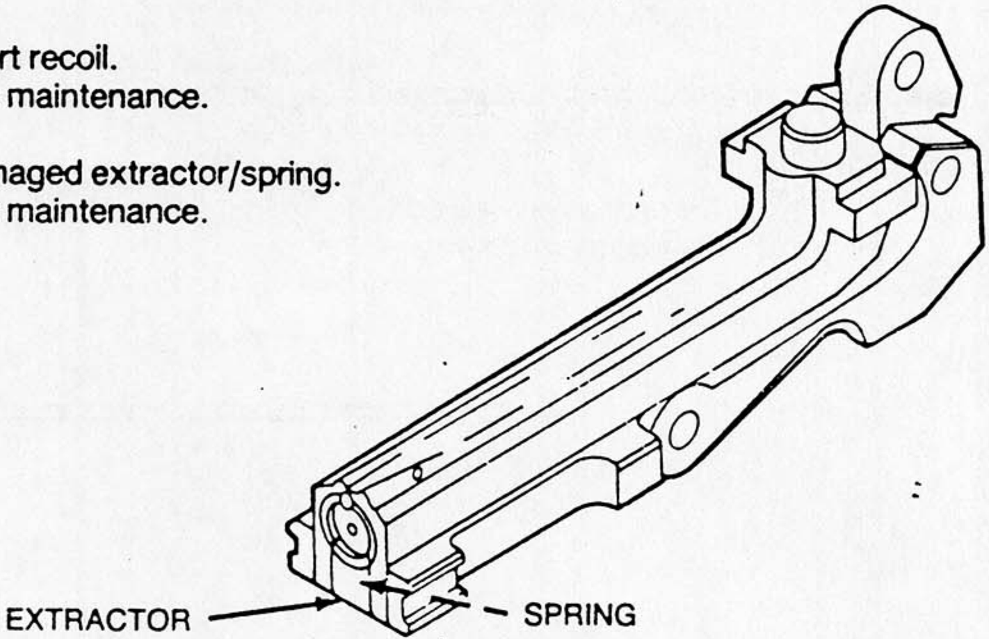
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

---

8. FAILURE TO EXTRACT.

Step 1. Check for short recoil.
Notify unit maintenance.

Step 2. Check for damaged extractor/spring.
Notify unit maintenance.



TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

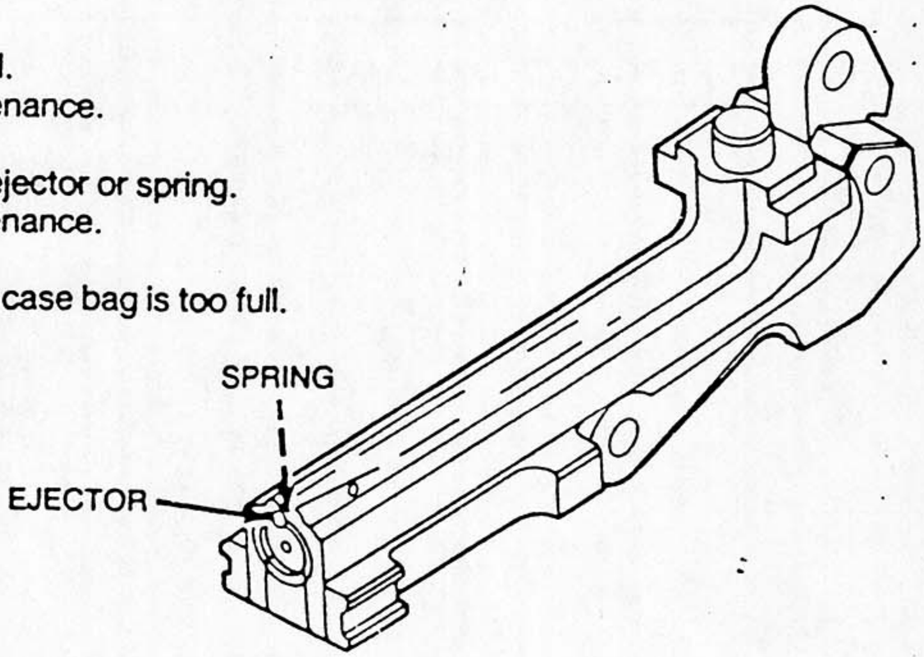
---

9. FAILURE TO EJECT.

Step 1. Check for short recoil.
Notify unit maintenance.

Step 2. Check for damaged ejector or spring.
Notify unit maintenance.

Step 3. Check to see if spent case bag is too full.
Empty bag.



TROUBLESHOOTING TABLE - CONT

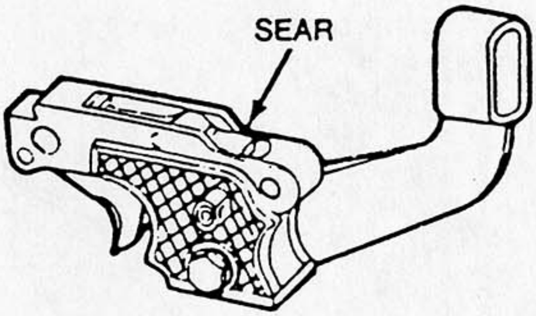
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

---

10. FAILURE TO COCK OR RUNAWAY WEAPON.

Step 1. Check for broken, worn, or burred sear.

Notify unit maintenance.



TROUBLESHOOTING TABLE - CONT

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

10. FAILURE TO COCK OR RUNAWAY WEAPON - continued

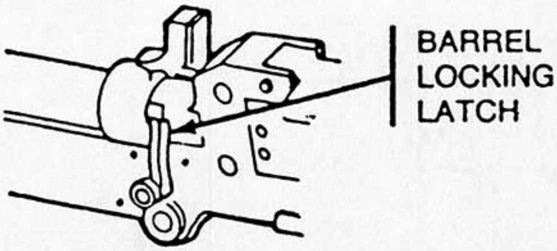
Step 2. Check to see if operating rod sear notch is worn.
Notify unit maintenance.

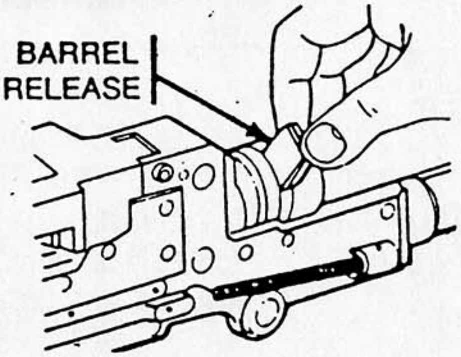
Step 3. Check to see if sear is stuck in trigger housing.
Notify unit maintenance.

Step 4. Check for short recoil.
Notify unit maintenance.

Section III. MAINTENANCE PROCEDURES

FIELD-STRIP.





WARNING

A HOT BARREL CAN BURN YOU. IF THE BARREL IS HOT, USE YOUR HEAT RESISTANT MITTENS.

1 Clear your machine gun (p 2-11).*

2 Depress barrel locking latch and hold.

3 Turn barrel release to upright position.

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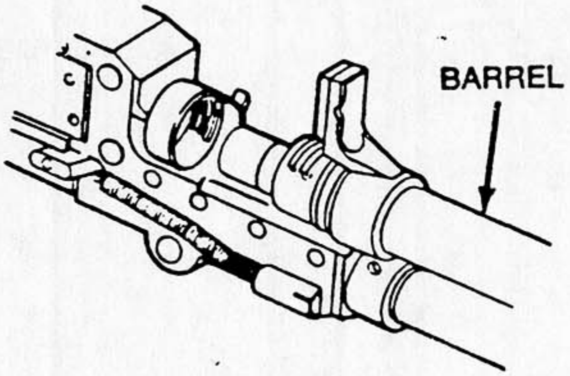
*To change barrels use steps 1, 2, and 3 above, and step 4 (p 3-22).

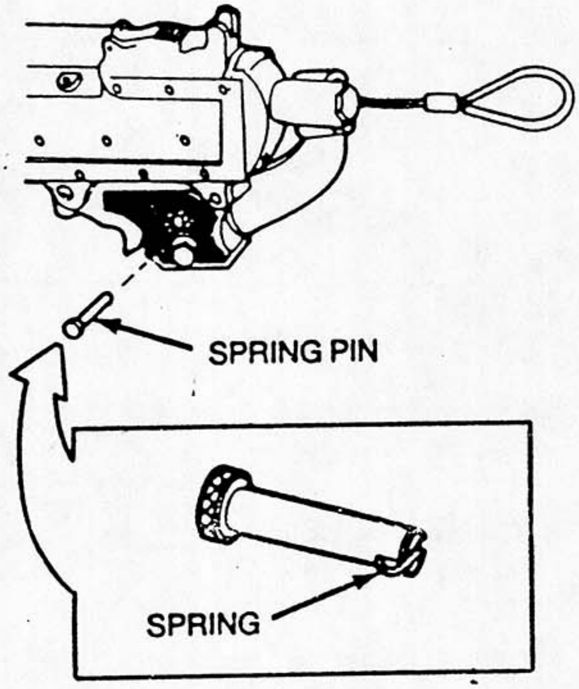
FIELD-STRIP - CONT.



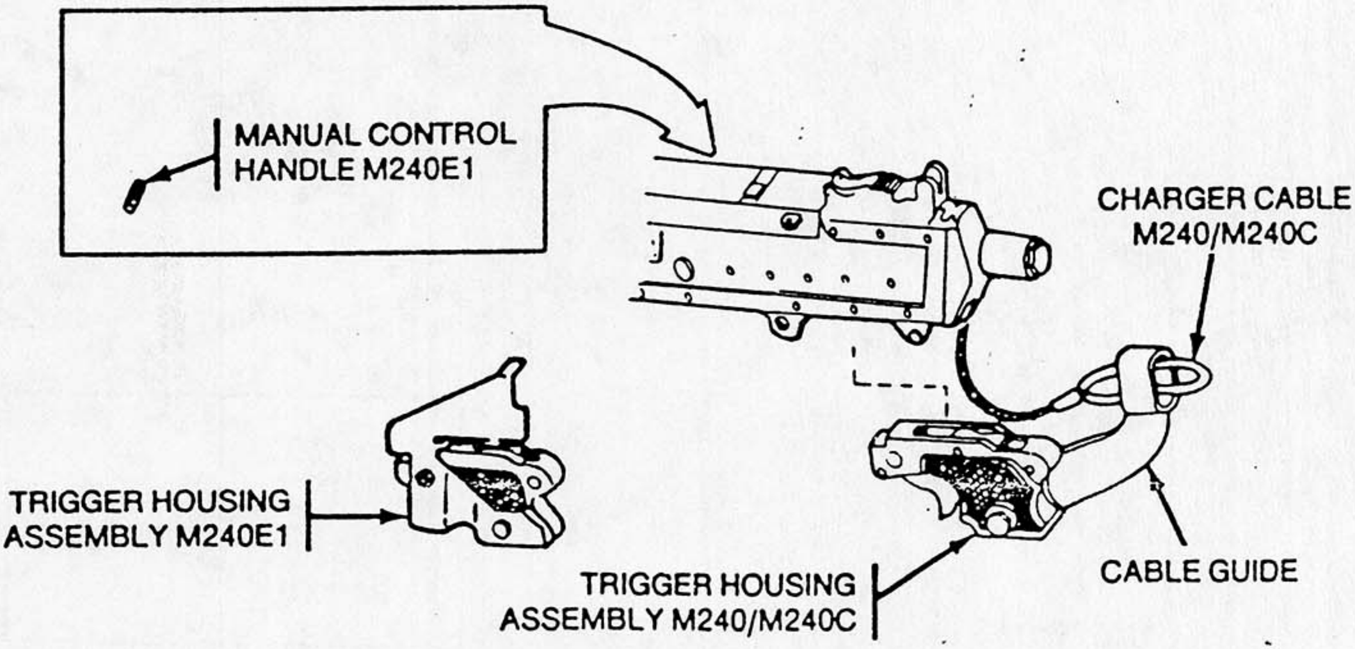
CAUTION

Be sure bolt is forward or receiver can be damaged.

4 Remove barrel. Pull straight out.

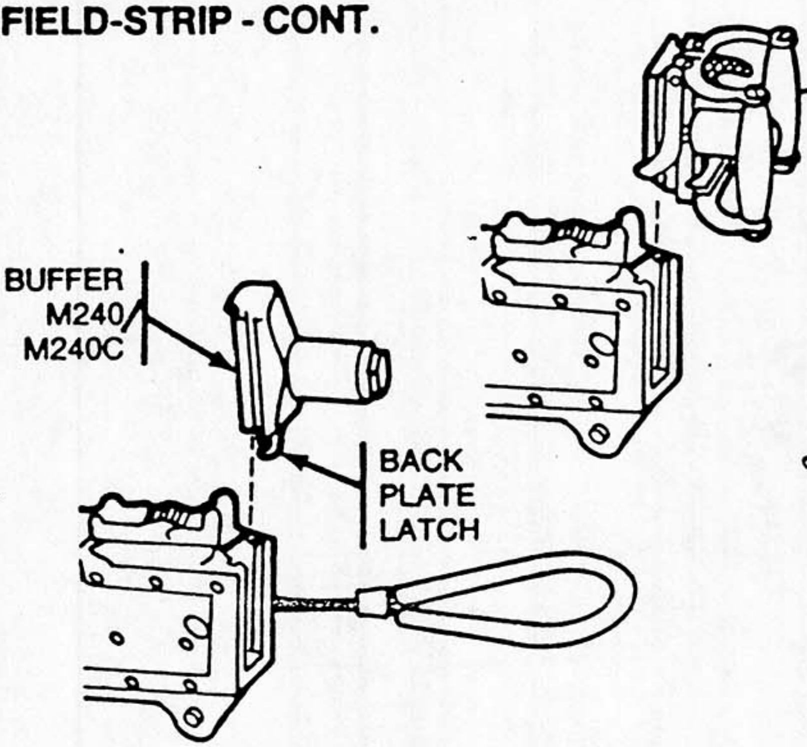


5 Depress spring and remove spring pin. (This can usually be done without tools.)


MANUAL CONTROL HANDLE M240E1
CHARGER CABLE M240/M240C
TRIGGER HOUSING ASSEMBLY M240E1
CABLE GUIDE
TRIGGER HOUSING ASSEMBLY M240/M240C

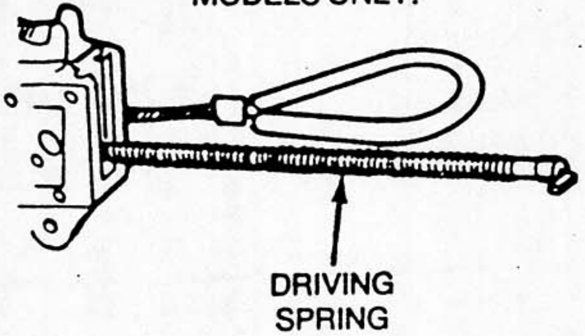
6 Pull trigger housing assembly down and back. Pull charger cable (M240 and M240C) through cable guide.

FIELD-STRIP - CONT.

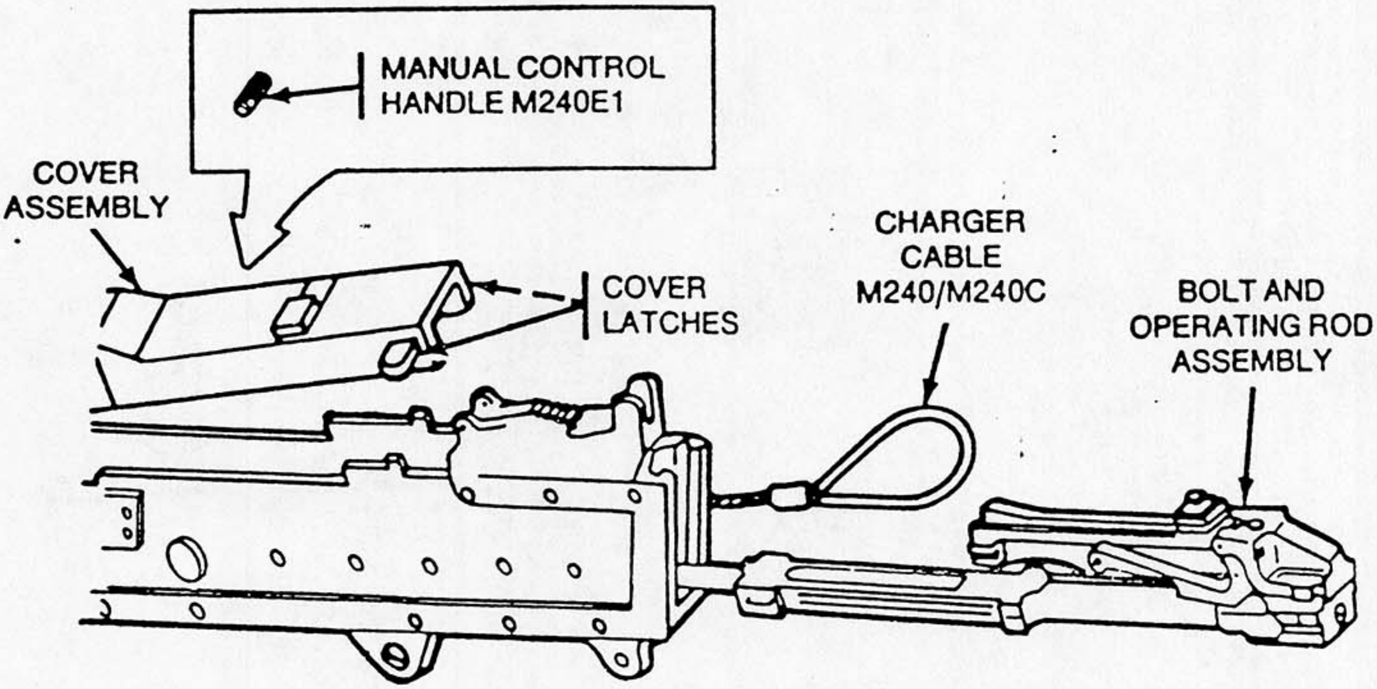


7 Depress back plate latch and lift buffer straight up.

NOTE
CHARGER CABLE IS ON THE M240 AND M240C MODELS ONLY.

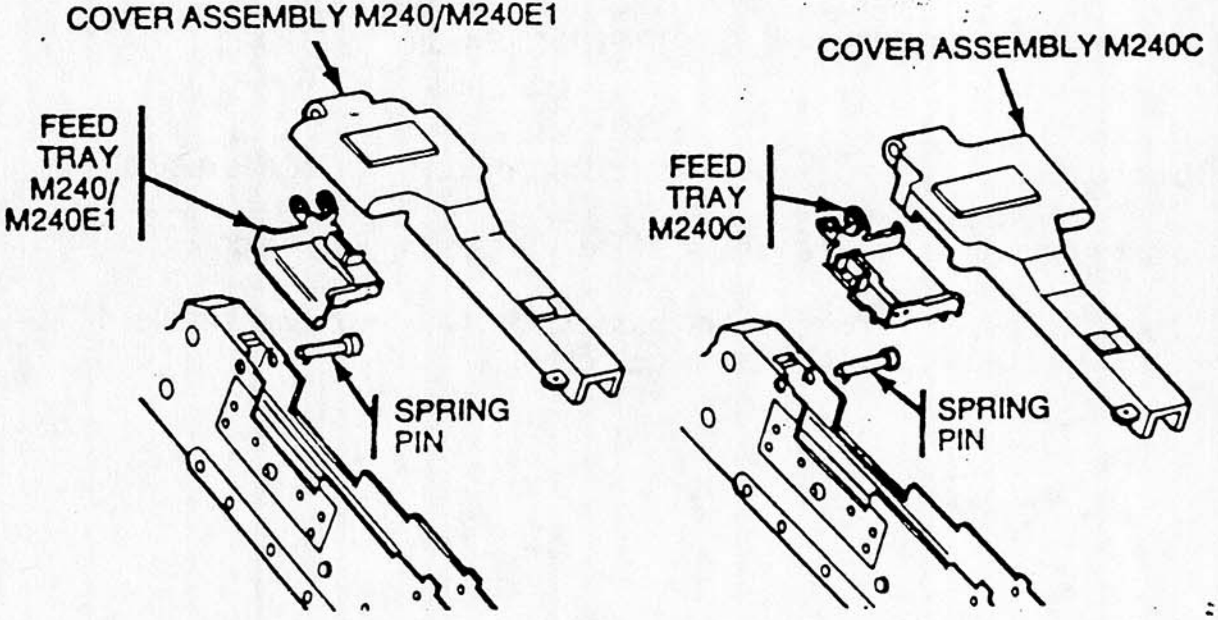


8 Press driving spring in, up, and pull out.



9 Depress cover latches and raise cover assembly. Pull charger cable (M240 and M240C) or manual control handle (M240E1) back; then pull bolt and operating rod assembly out.

FIELD-STRIP - CONT.



10 Close cover. Push out spring pin as far as possible with the back of buffer. Then remove pin with fingers. Remove cover assembly and feed tray.

CLEANING, INSPECTION, AND REPAIR.

WARNING

USING GASOLINE, KEROSENE, HYDRAULIC OIL, BENZENE, BENSOL, HIGH PRESSURE WATER, STEAM, OR AIR FOR CLEANING IS PROHIBITED.

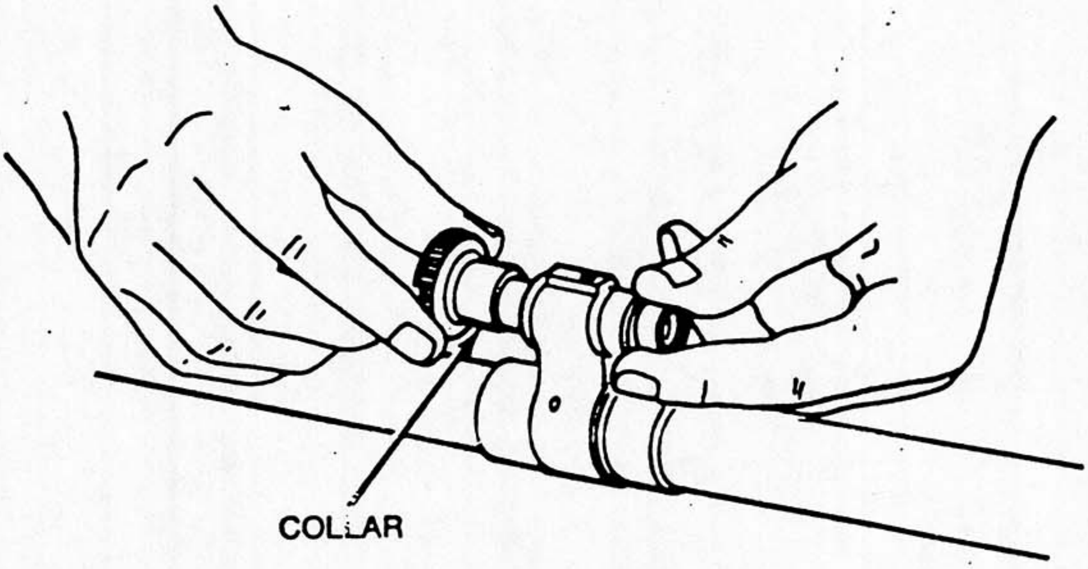
CAUTION

Do not use abrasives to clean the bore, piston, gas cylinder, or gas regulator plug.

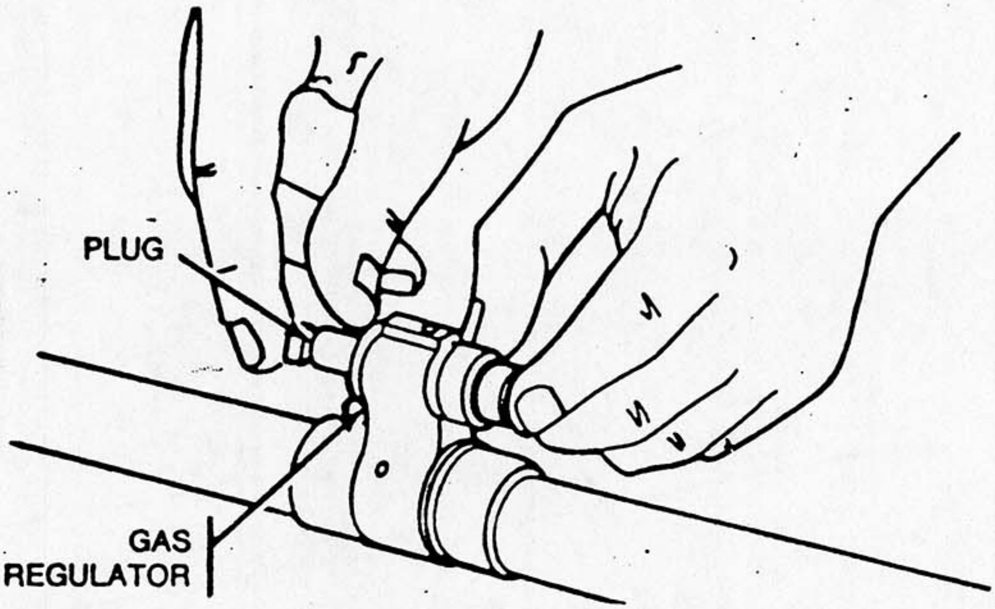
Do not submerge buffer in any liquid. Wipe with clean wiping rag only.

Do not allow cleaning solvents to come in contact with the rubber handle of the charger cable (M240 and M240C models only).

CLEANING, INSPECTION, AND REPAIR - CONT.



1 Rotate collar until it releases, then pull it out.



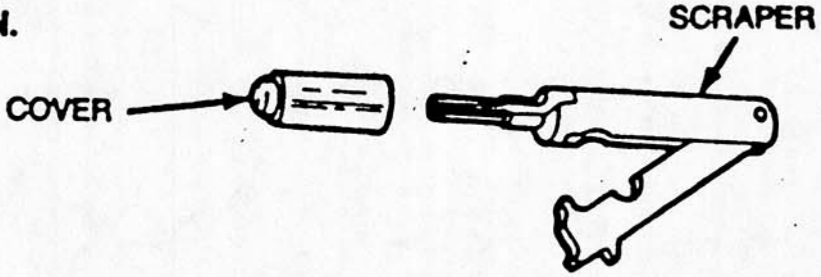
2 Pull plug from gas regulator.

NOTE

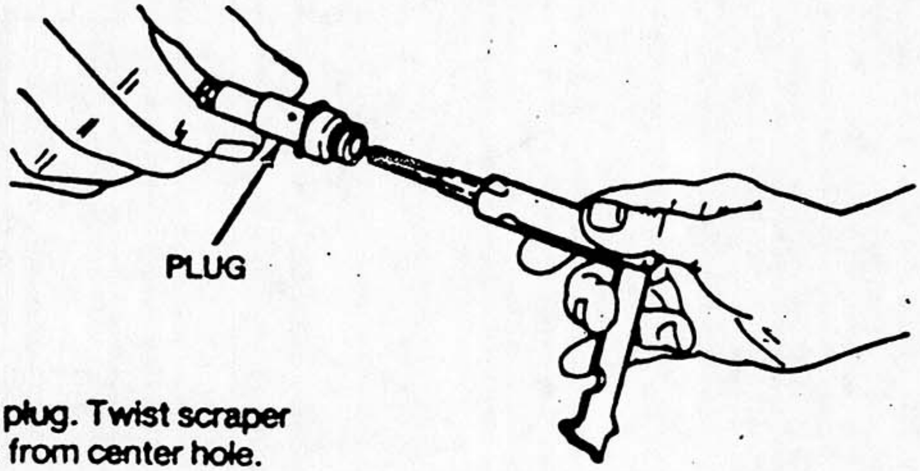
If the plug cannot be removed by hand from the gas regulator, send the gun to unit maintenance for removal.

CLEANING, INSPECTION, AND REPAIR - CONT.

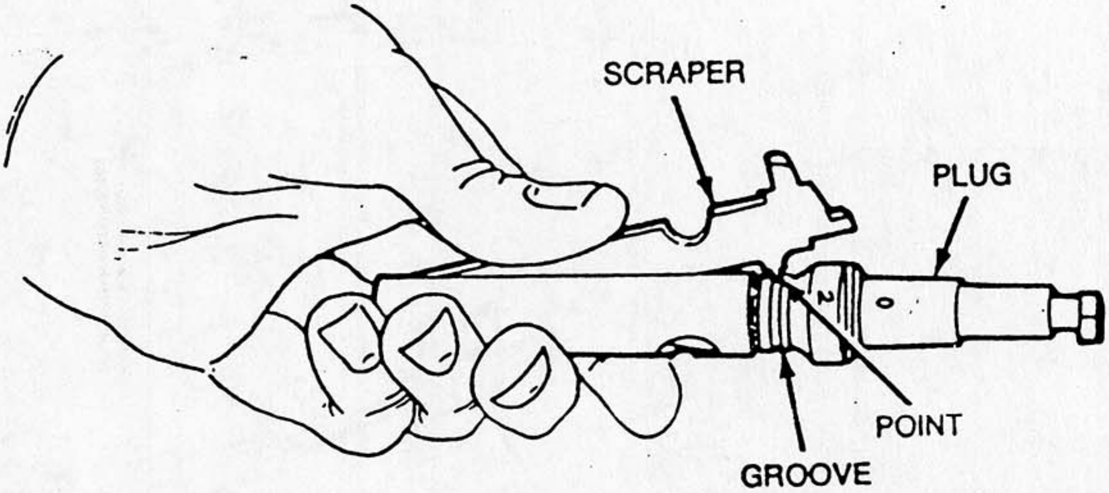
USE SCRAPER TO REMOVE CARBON.



3 Remove cover from scraper.

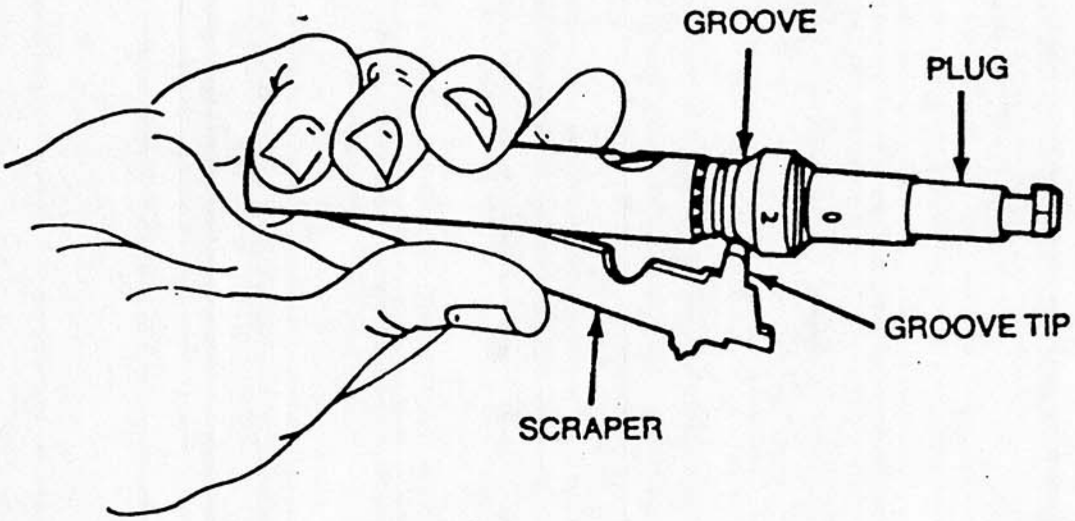


4 Insert scraper into center hole of plug. Twist scraper back and forth to remove carbon from center hole.

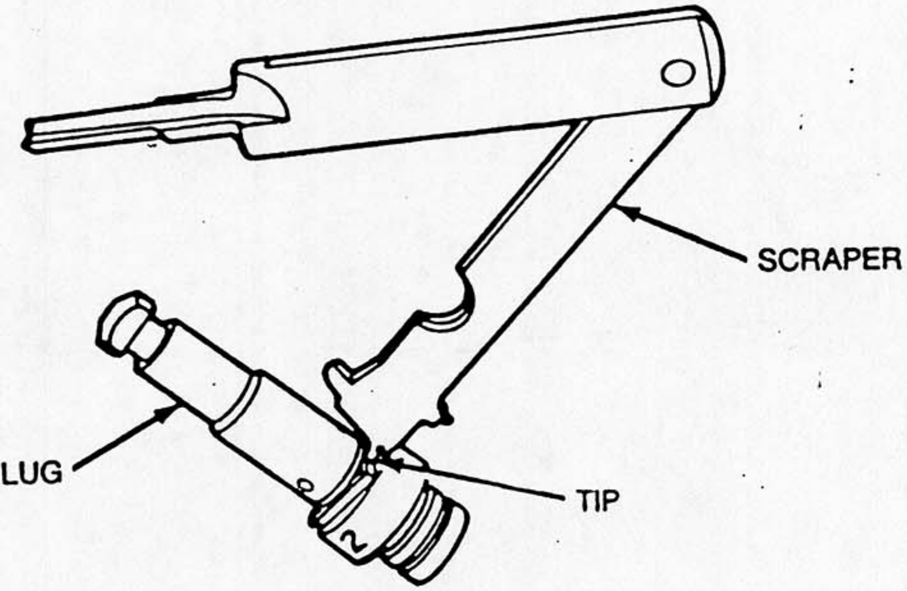


5 Fold scraper and press point into groove. Twist plug back and forth to remove carbon from groove on plug.

CLEANING, INSPECTION, AND REPAIR - CONT.



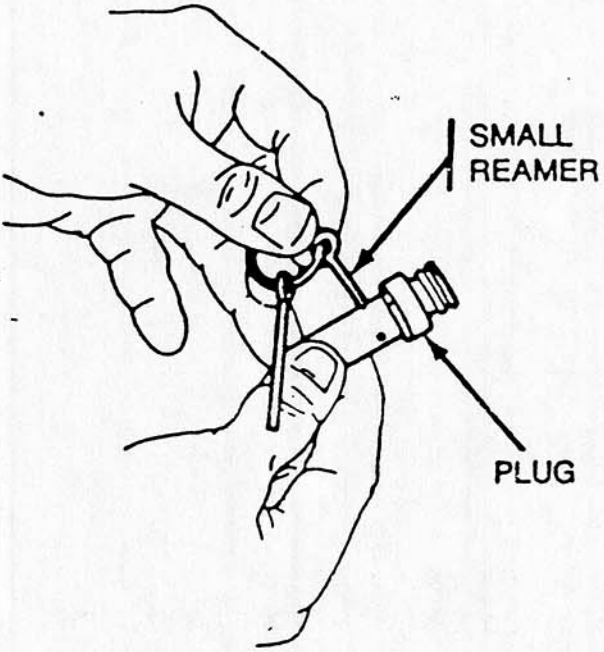
6 Pivot scraper blade and place groove tip of scraper into groove of plug and twist back and forth to remove carbon from groove on plug.

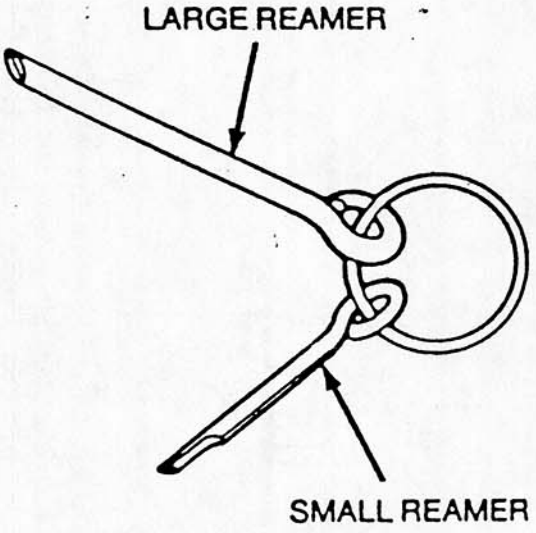


7 With tip of scraper, scrape carbon from surfaces of plug.

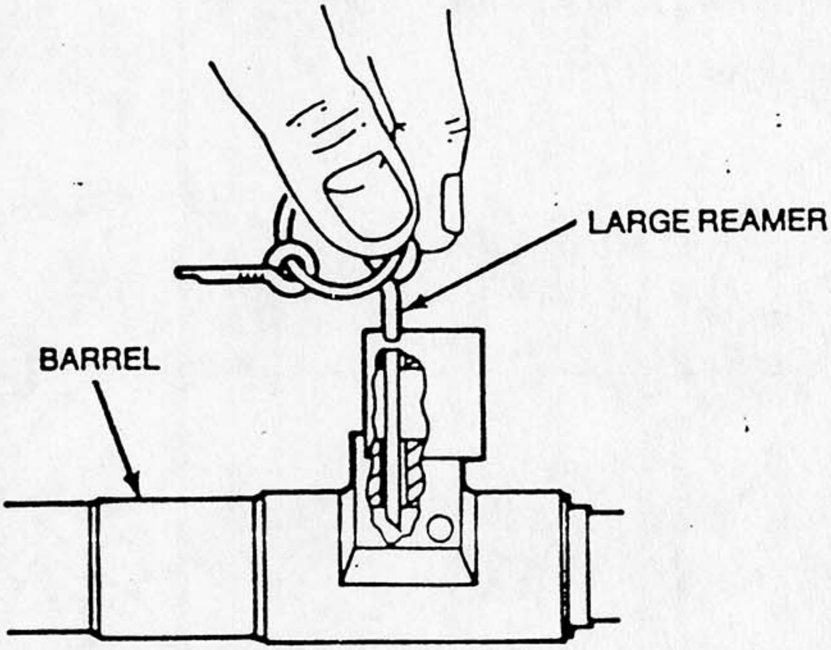
CLEANING, INSPECTION, AND REPAIR - CONT.

USE REAMER TO REMOVE CARBON.



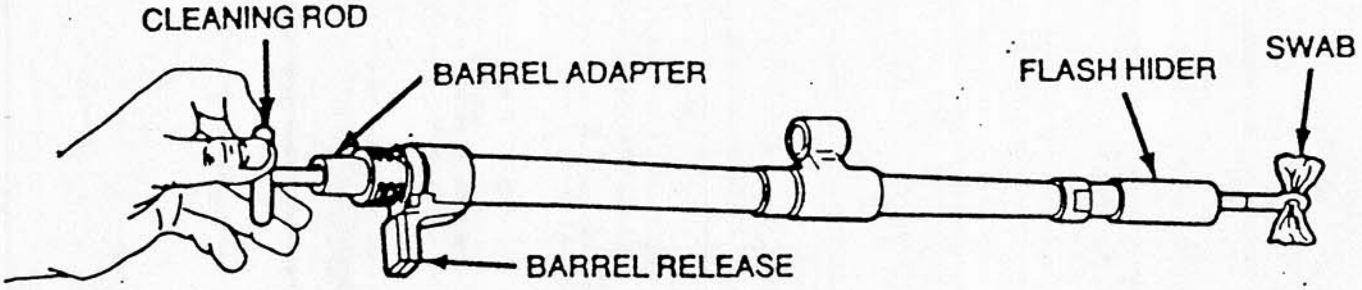


8 Insert small reamer into each gas inlet hole of plug and twist back and forth to remove carbon.



9 Insert large reamer through hole into gas port hole in barrel, and twist back and forth to remove carbon from gas port hole in barrel.

CLEANING, INSPECTION, AND REPAIR - CONT.



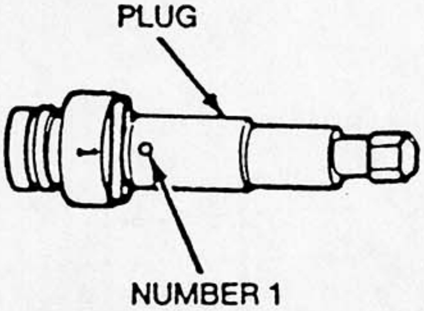
CAUTION

Do not lube plug or recess in barrel for plug.

Do not use abrasives to clean plug.

10 Remove dirt and corrosion from bore using cleaning rod and swab (item 6, app D) dampened with CLP (item 1, app D). Remove dirt and corrosion from other parts using wiping rag (item 5, app D) dampened with CLP (item 1, app D) or RBC (item 2, app D). Lightly oil with CLP (item 1, app D), LAW (item 3, app D), or LSA (item 4, app D).

11 Inspect for cracks, dents, burrs, or other damage on flash hider, barrel adapter, and barrel release.

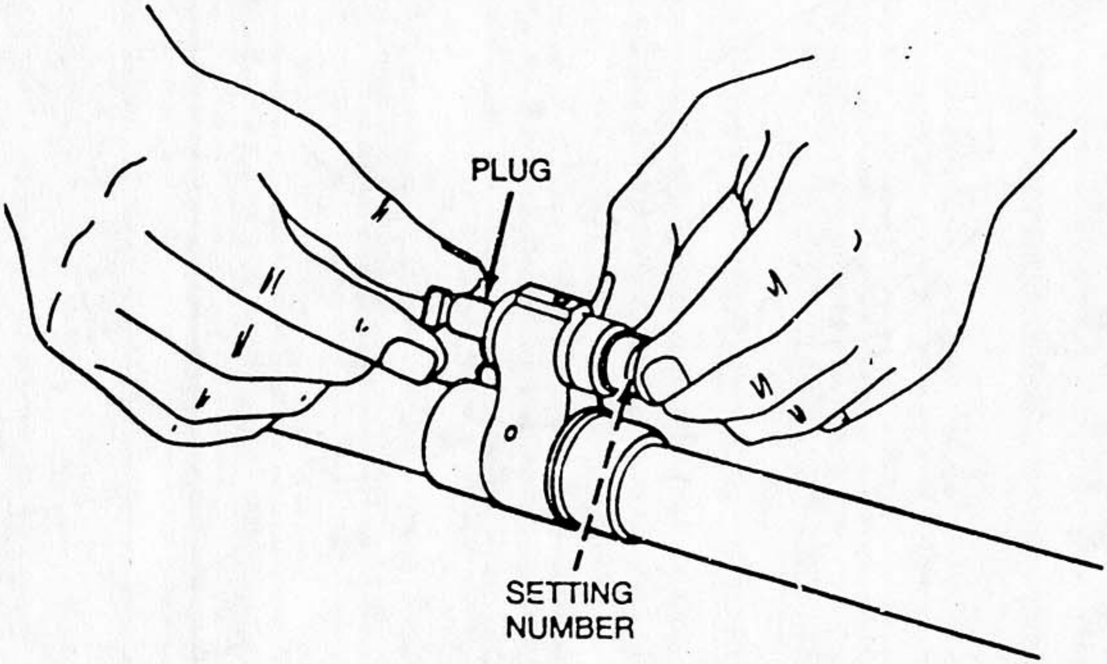


NOTE

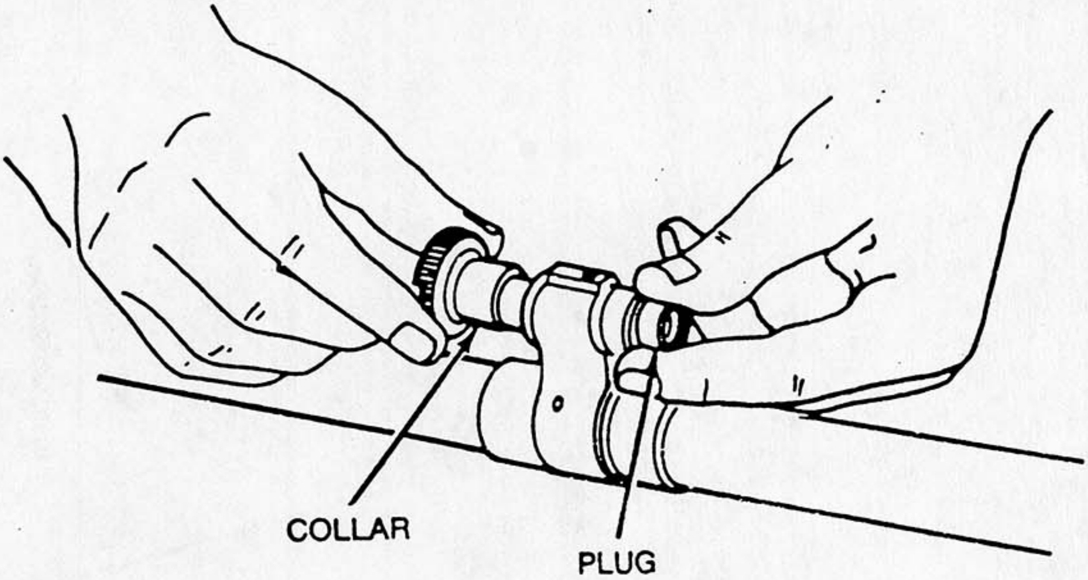
The plug is designed with three gas inlet settings to maintain the rate of fire. This design is intended to maintain a consistent rate of fire under adverse conditions and NOT TO INCREASE YOUR RATE OF FIRE. Gas inlet setting number 1 (number facing the barrel) is preferred for normal conditions.

Setting number 1 = 650 rds/m approx
Setting number 2 = average (mean)
Setting number 3 = 950 rds/m approx

CLEANING, INSPECTION, AND REPAIR - CONT.



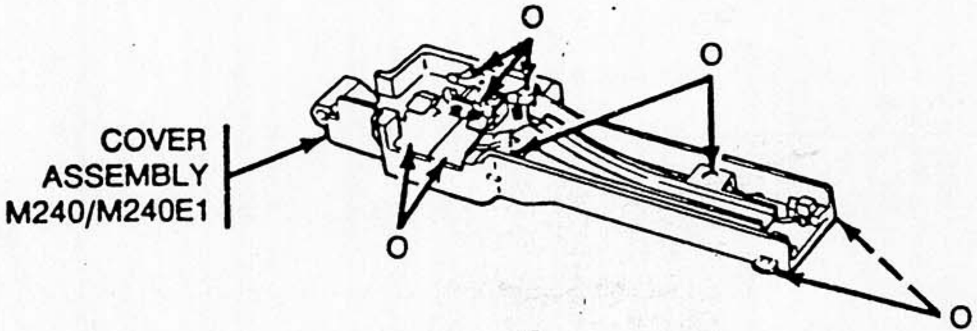
12 Place plug with gas inlet setting number 1 hole facing the barrel.



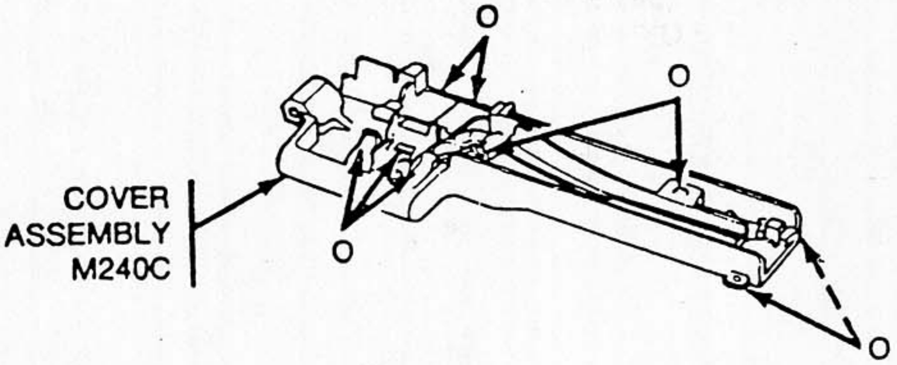
13 Install collar on plug. Rotate collar until it slips onto plug. Press in and rotate to lock in place (pull collar to be sure it is in the locked position).

CLEANING, INSPECTION, AND REPAIR - CONT.

14 Check cover assembly for smooth operation, spring tension, bent parts, or excessive wear.

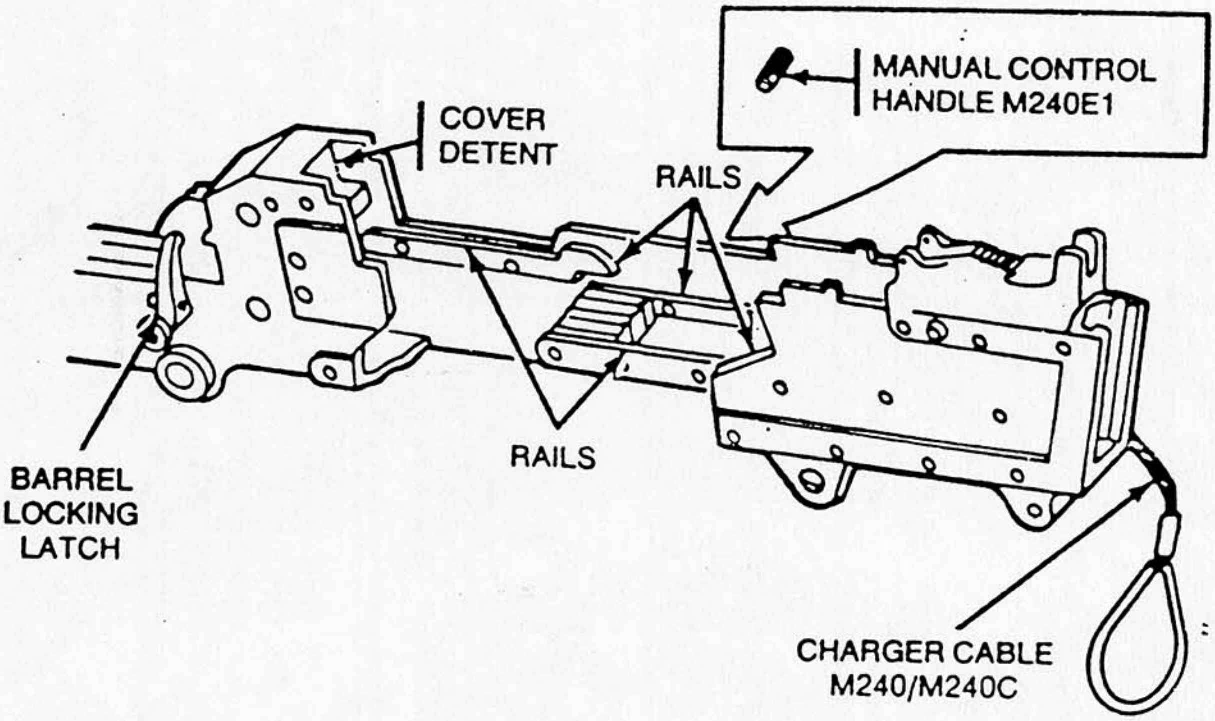


O - Lightly oil moving parts.



O - Lightly oil moving parts.

15 Check for bends and cracks, free movement of charger cable (M240 and M240C) or manual control handle (M240E1), and excessively worn, burred, or chipped rails. Check barrel locking latch and cover detent for proper spring tension.



CLEANING, INSPECTION, AND REPAIR - CONT.

16 Check trigger assembly.

NOTE

Perform step 16a for M240 and M240C machine guns or step 16b for M240E1 machine gun.

a Check for broken grips, bent cable guide, loose nut and bolt, and chipped or cracked trigger housing holding lug.

b Check for broken grips, bent, cracked or broken trigger actuating assembly, loose nut and bolt, and chipped or cracked trigger housing holding lug.

17 Check tripping lever and sear for burrs, cracks, chips, and wear.

18 Notify unit maintenance if problem exists.

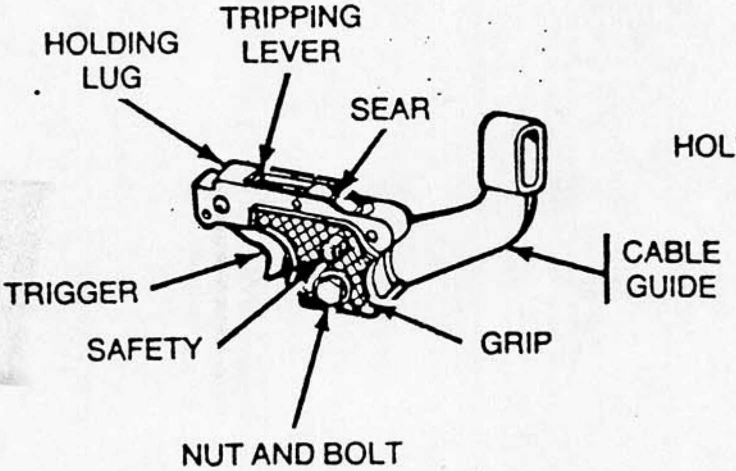
NOTE

To place safety to "S," the sear must be up.

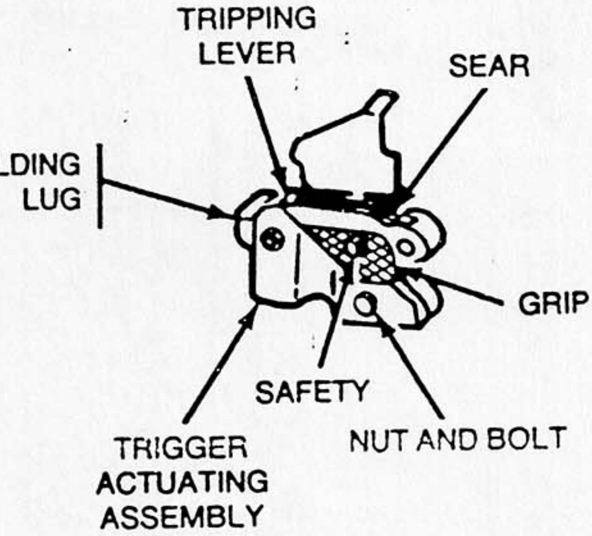
19 Check cocking action by pushing back on tripping lever (sear will raise). Pull trigger (sear will lower).

20 Check safety functions. When safety is placed to "S," pull trigger (sear will not lower). When safety is placed to "F," pull trigger (sear will lower).

21 Lightly lubricate tripping lever and sear surfaces.



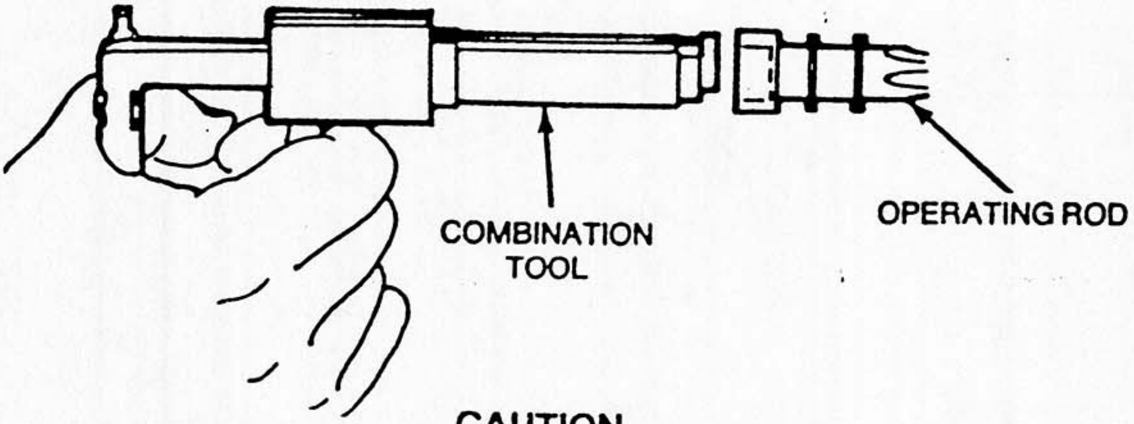
M240/M240C



M240E1

CLEANING, INSPECTION, AND REPAIR - CONT.

USE COMBINATION TOOL TO CLEAN CARBON FROM PISTON HEAD CAVITY OF OPERATING ROD.

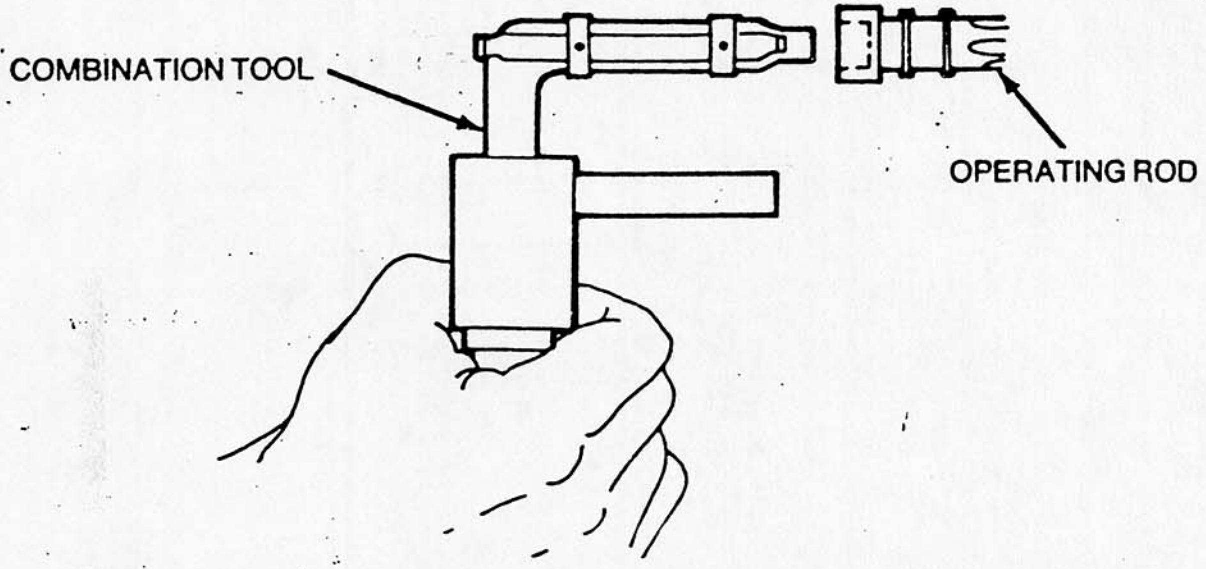


CAUTION

Do not use abrasives to clean the operating rod piston.

Be sure tool bottom is securely against face of piston.

22 Insert combination tool into bottom of cavity of piston end of operating rod. Squeeze handles firmly and twist combination tool back and forth to remove carbon.



23 Insert screwdriver end of combination tool into cavity of piston end of operating rod to remove carbon residue in bottom of cavity.

24 Clean all other areas of operating rod, firing pin, and spring pin with wiping rag (item 5, app D) dampened with CLP (item 1, app D) or RBC (item 2, app D). Lightly oil with LAW (item 3, app D) or LSA (item 4, app D) after cleaning.

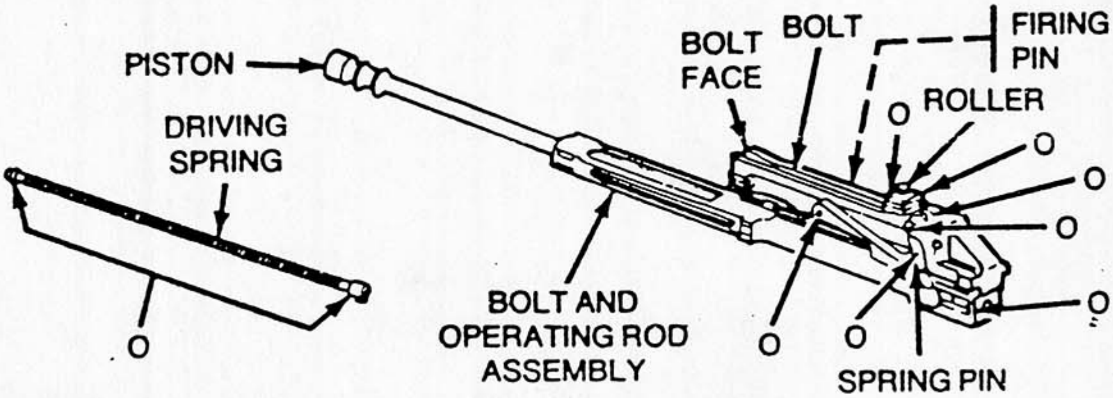
CLEANING, INSPECTION, AND REPAIR - CONT.

25 Check bolt and operating rod assembly for burrs, cracks, broken pins, or frozen roller. Push down on roller to make sure it will retract. Check driving spring for broken strands. Notify unit maintenance if broken strands are found.

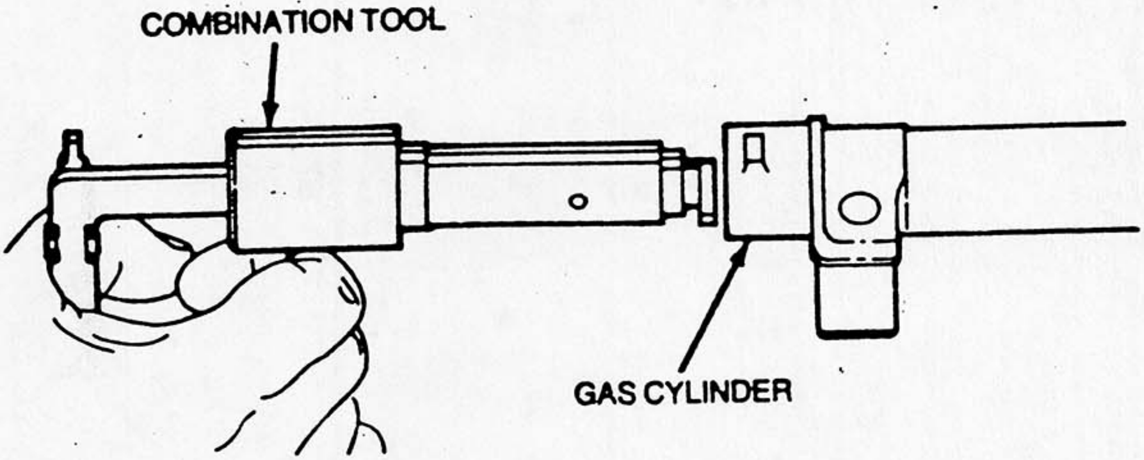
NOTE

Do not lubricate face of bolt. Do not oil piston.

O - Lightly oil driving spring. Lightly oil bolt and operating rod assembly moving parts, polished areas, firing pin, and roller.



USE COMBINATION TOOL TO CLEAN GAS CYLINDER END OF RECEIVER BODY.

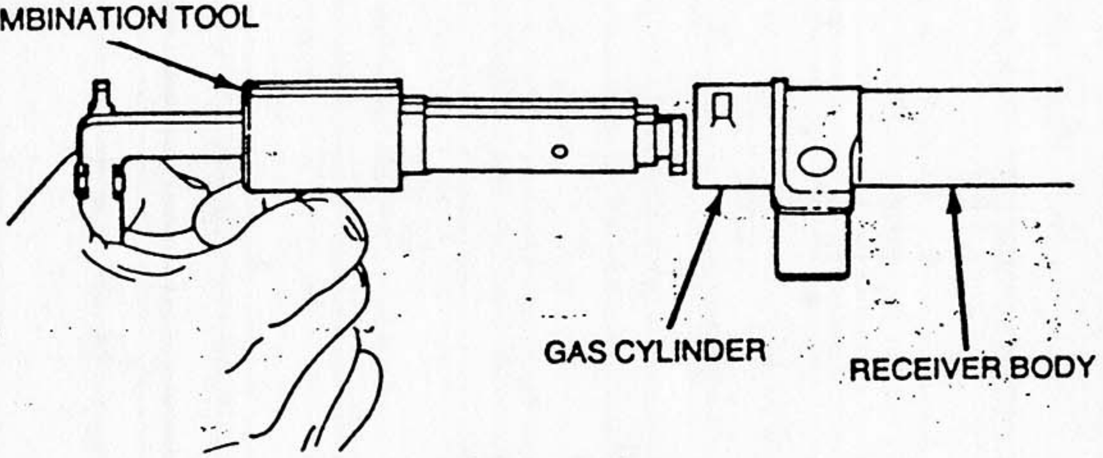


CAUTION

Do not use an abrasive to clean gas cylinder end of receiver.

26 Insert combination tool carefully into the fore end of the gas cylinder of the receiver body.

CLEANING, INSPECTION, AND REPAIR - CONT.

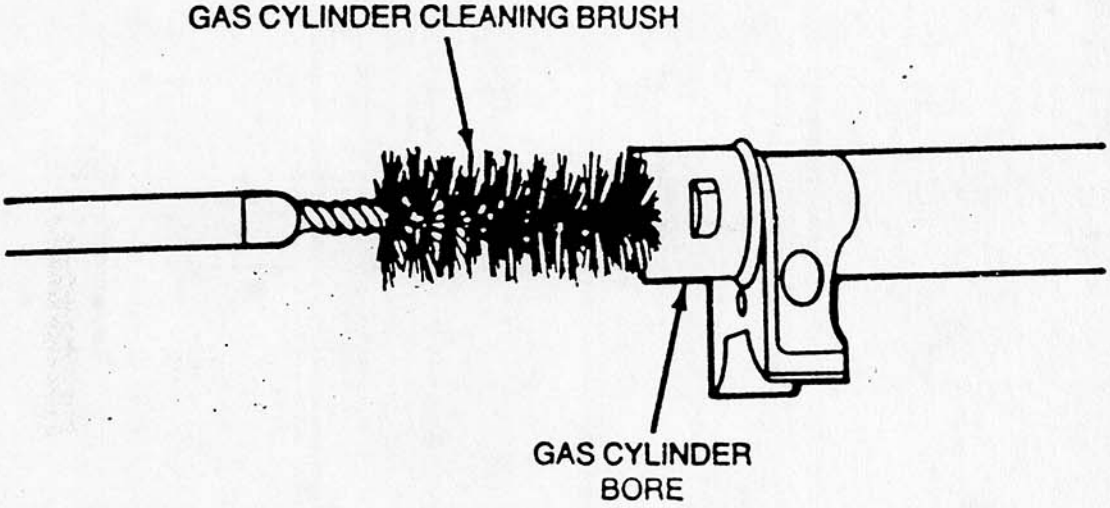


CAUTION

If combination tool is not properly seated, it could cause damage to smaller diameter of gas cylinder.

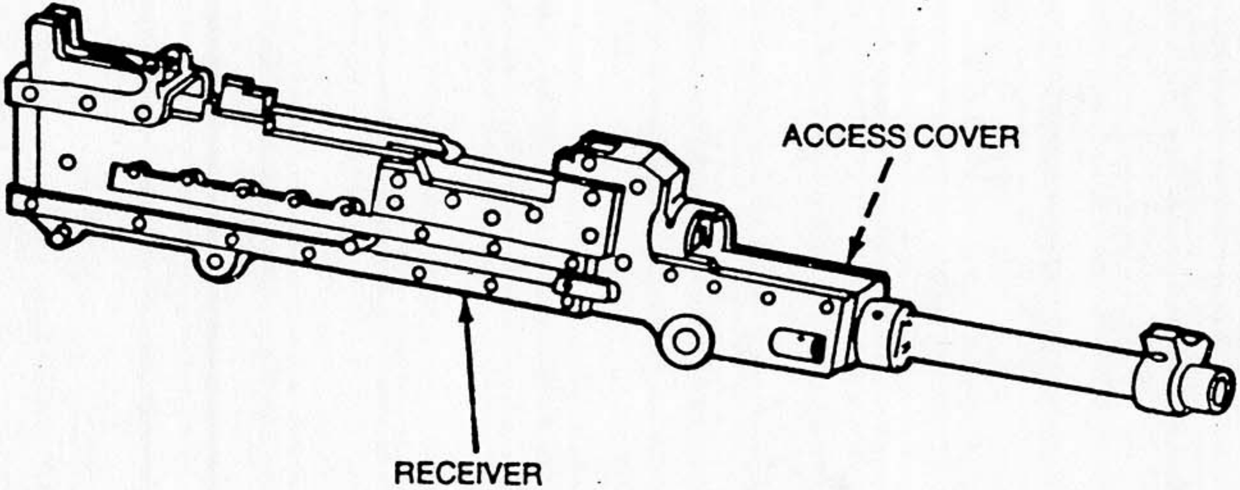
27 Be sure the combination tool shoulder is fully inserted and seated against the fore end of gas cylinder in receiver body.

28 Apply slight pressure to handles and twist back and forth to remove carbon.



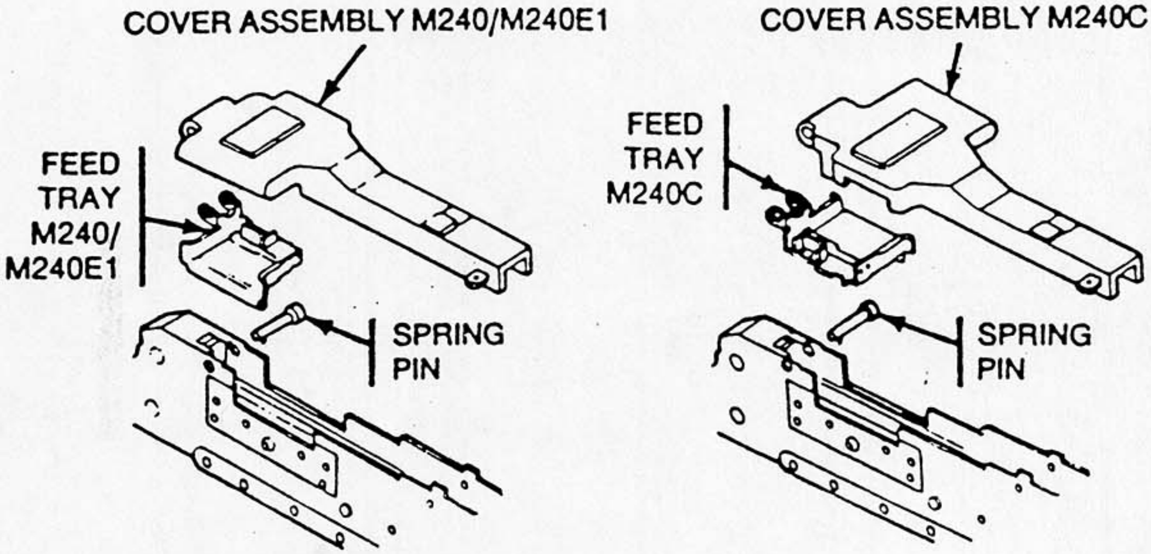
29 Clean gas cylinder bore with gas cylinder cleaning brush dampened with CLP (item 1, app D) or RBC (item 2, app D).

CLEANING, INSPECTION, AND REPAIR - CONT.



30 With wiping rag (item 5, app D) dampened with CLP (item 1, app D) or RBC (item 2, app D), remove dirt and corrosion from area under front access cover of receiver and all other parts and areas.

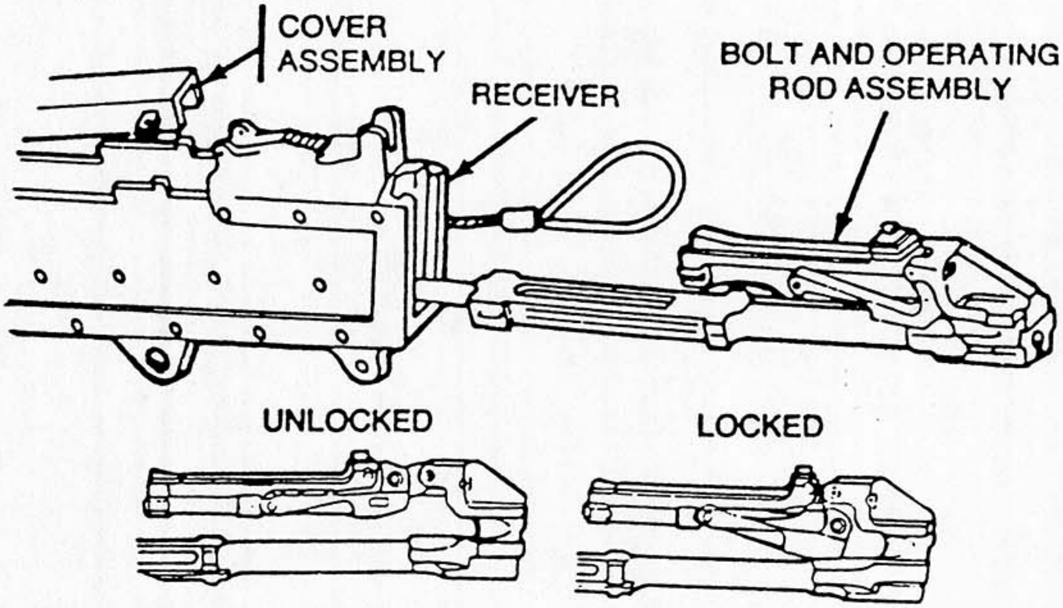
HOW TO PUT IT TOGETHER.



1 Position feed tray and cover assembly; push cover assembly forward; close cover and insert spring pin.

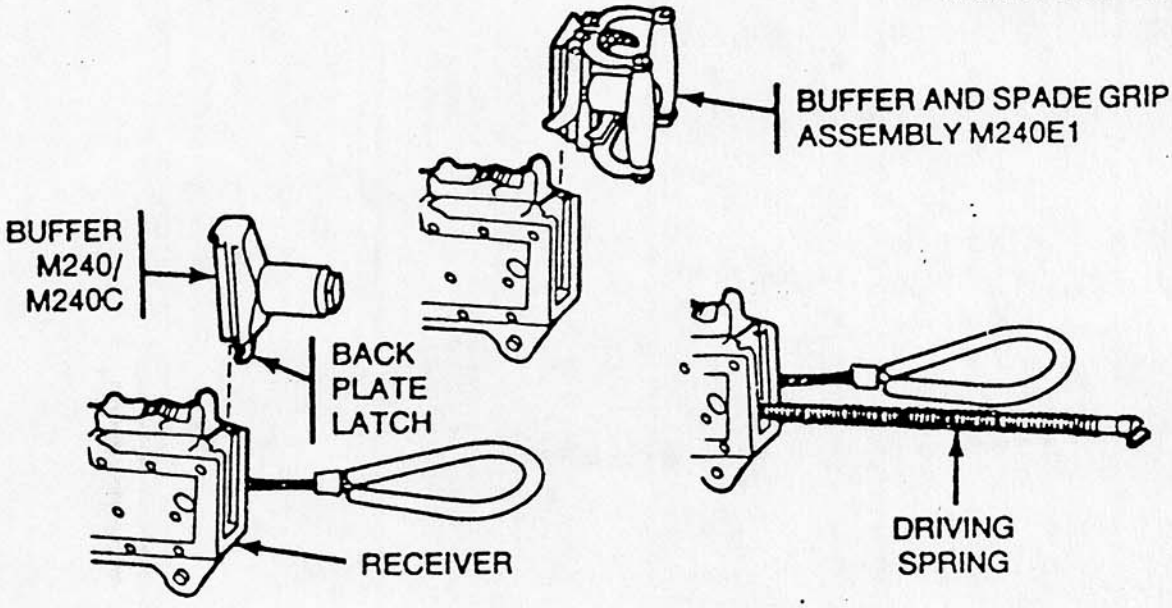
NOTE
Insert spring pin from right side.

HOW TO PUT IT TOGETHER - CONT.



2 Open cover assembly. Be sure cover detent holds cover assembly open. If cover assembly does not remain open, notify unit maintenance.

3 Set bolt and operating rod assembly on top of top of rails (receiver). Extend bolt to unlocked position, then push the assembly all the way in the receiver. Close cover assembly and lock.



NOTE

Charger cable is on the M240 and M240C models only.

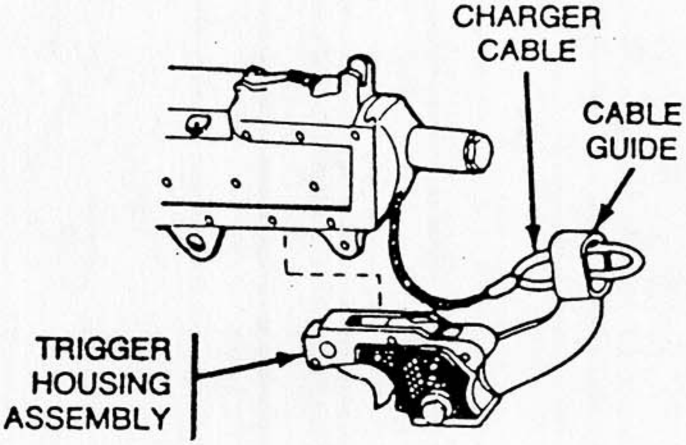
4 Insert driving spring into operating rod assembly. Push it in fully and lower it to seat the stud in hole of receiver.

5 Install buffer assembly/buffer and spade grip assembly and make sure it latches.

NOTE

Top of buffer should be flush with top of receiver.

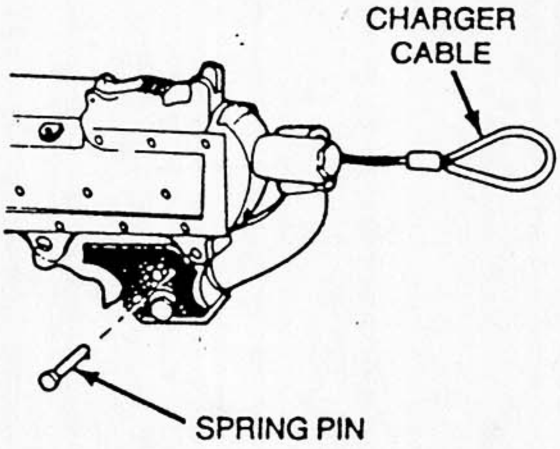
HOW TO PUT IT TOGETHER - CONT.



6 Slide charger cable (M240 and M240C) through cable guide and position trigger housing assembly into place.

NOTE

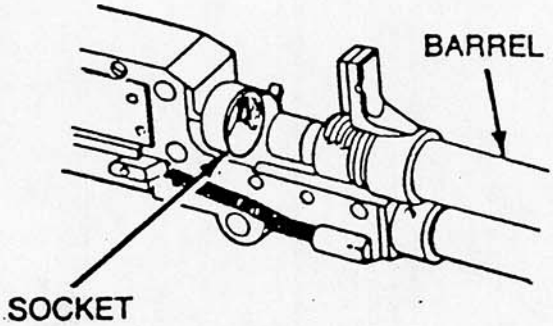
For M240E1 machine gun, pull manual control handle rearward.

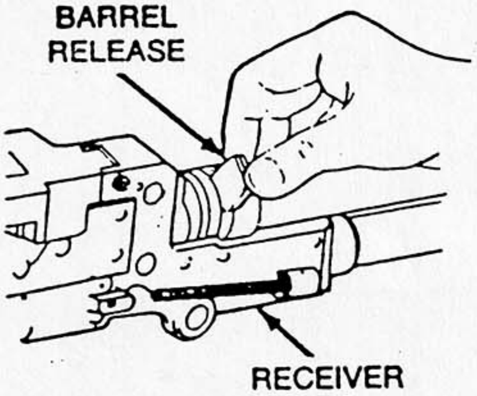


7 Insert spring pin.

NOTE

Pin can be inserted from either side.





WARNING

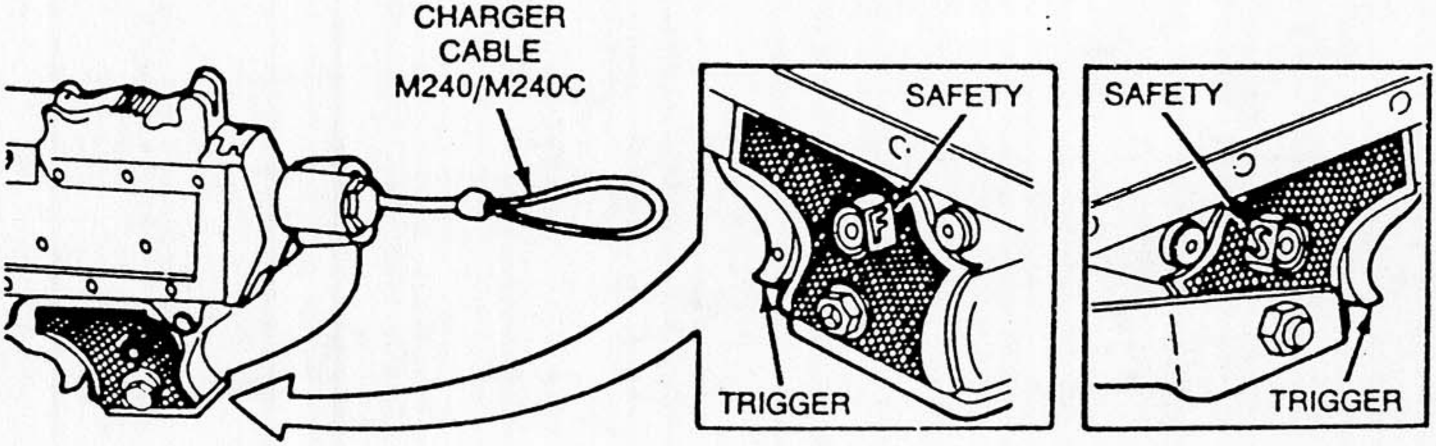
BEFORE FIRING, MAKE SURE THE BARREL IS LOCKED TIGHTLY IN THE RECEIVER. IF BARREL IS NOT LOCKED TIGHT, THREADS IN RECEIVER COULD BE DAMAGED OR CAUSE PERSONAL INJURY.

NOTE

Barrel release must be in upright position when installing barrel.

8 Insert barrel fully into socket and push barrel release to the right as far as it will go to lock. If barrel binds in socket or if barrel release will not rotate when pushed, do not pound on barrel release. Take machine gun to unit maintenance.

SAFETY/FUNCTION CHECK.

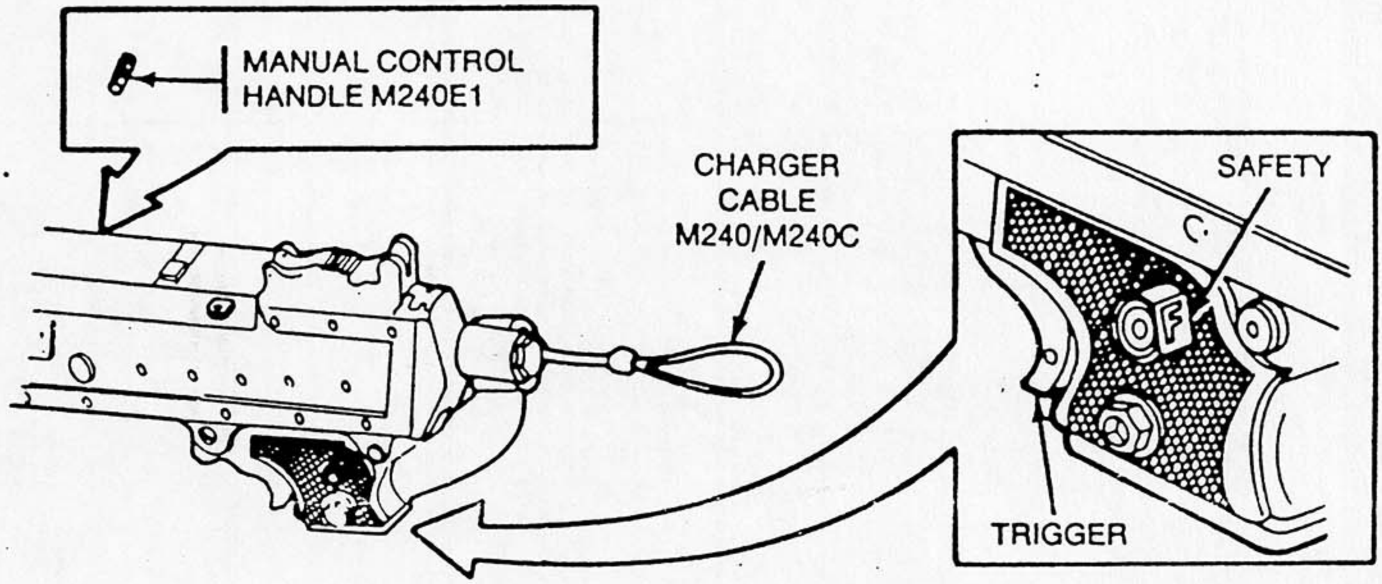


1 Place safety to "F."

2 Pull charger cable (M240 and M240C) or manual control handle (M240E1) to rear to lock bolt back.

3 Place safety to "S."

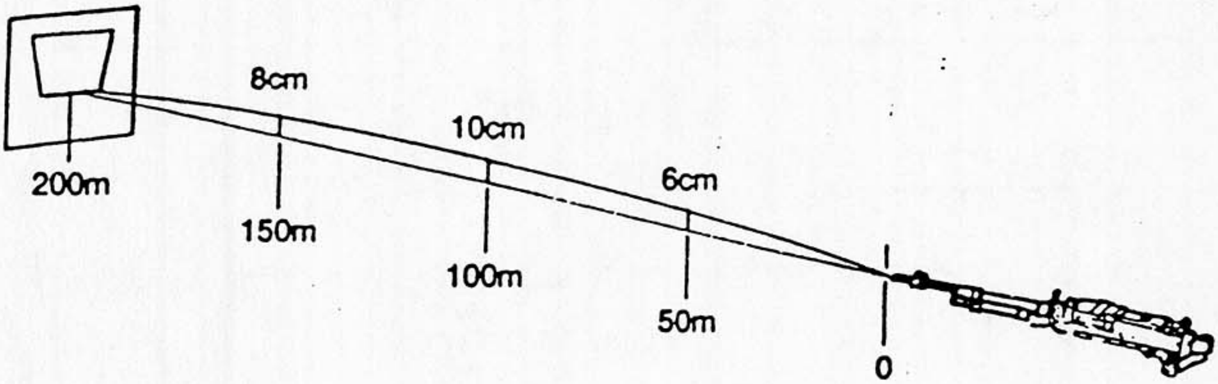
4 Depress trigger - nothing should happen.



5 Place safety to "F."

6 Hold charger cable (M240 and M240C) or manual control handle (M240E1) to rear, depress trigger, and ease bolt forward to close and lock.

SIGHT CHECK/SIGHT SETTING (M240E1 ONLY).



1 The gun is usually zeroed at 200 m.

2 To set it for shorter distances, it will be necessary to obtain the following mean points, taking into account the elements of the bullet trajectory and the displacement angle between the line of sight and the line of elevation of the barrel.

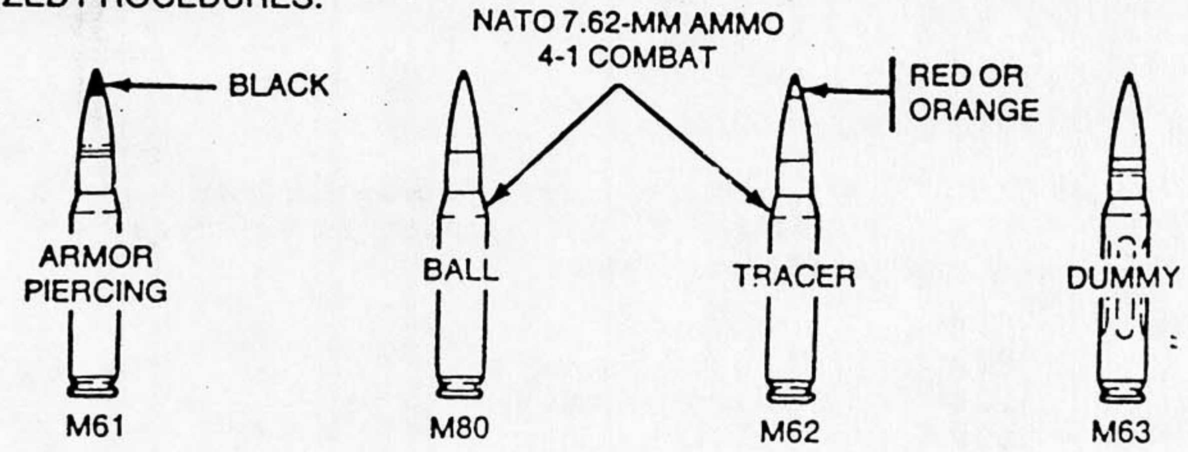
Firing at:	50 m	+ 6 cm from point sighted
	100 m	+ 10 cm from point sighted
	150 m	+ 8 cm from point sighted
	200 m	0 or on point sighted

CHAPTER 4
AMMUNITION

WARNING

THIS IS THE ONLY AMMUNITION AUTHORIZED FOR USE IN YOUR MACHINE GUN. IF IT IS NOT SHOWN, IT IS NOT AUTHORIZED.

AMMUNITION WHICH FAILS TO FIRE WILL BE DISPOSED OF BY AUTHORIZED PROCEDURES.



AMMUNITION - CONT.

1 Protect ammunition from mud, sand, and water. If the ammuntion gets wet or dirty, wipe it off at once with a clean, dry rag (item 5, app D). Wipe off light corrosion as soon as it is discovered. Turn in heavily corroded cartridges.

2 Do not expose ammunition to the direct rays of the sun. If the powder is hot, excessive pressure may be developed when the weapon is fired.

3 Do not oil or grease ammunition. Dust and other abrasives that collect on greasy ammunition may cause damage to the operating parts of the machine gun. Moreover, oiled cartridges produce excessive chamber pressure.

4 Do not fire dented cartridges, cartridges with loose bullets, or otherwise defective rounds.

APPENDIX A
REFERENCES

SCOPE. This appendix lists all forms, field manuals, and miscellaneous publications referenced in this manual.

FORMS.

DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2028	Recommended Changes to Publications and Blank Forms
SF 368	Product Quality Deficiency Report

FIELD MANUALS.

FM 3-5	NBC Decontamination
FM 21-11	First Aid for Soldiers

U.S. MARINE CORPS PUBLICATIONS AND FORMS.

MCO 4855.10	Quality Deficiency Report Manual
NAVMC Form 10772	Recommended Changes to Technical Publications
TM 4700.15/1	Equipment Record Procedures

MISCELLANEOUS PUBLICATIONS.

CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 738-750	The Army Maintenance Management System (TAMMS)

APPENDIX B
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

SCOPE. This appendix lists components of the end item and basic issue items for the machine gun to help you inventory items required for safe and effective operation.

GENERAL. The Components of End Item and Basic Issue Items Lists are divided into the following sections:

Section II. Components of End Item. There are no components of end items.

Section III. Basic Issue Items. These are the minimum essential items required to place the machine gun in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the machine gun during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to- identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

EXPLANATION OF COLUMNS. The following provides an explanation of columns found in the tabular listings:

Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

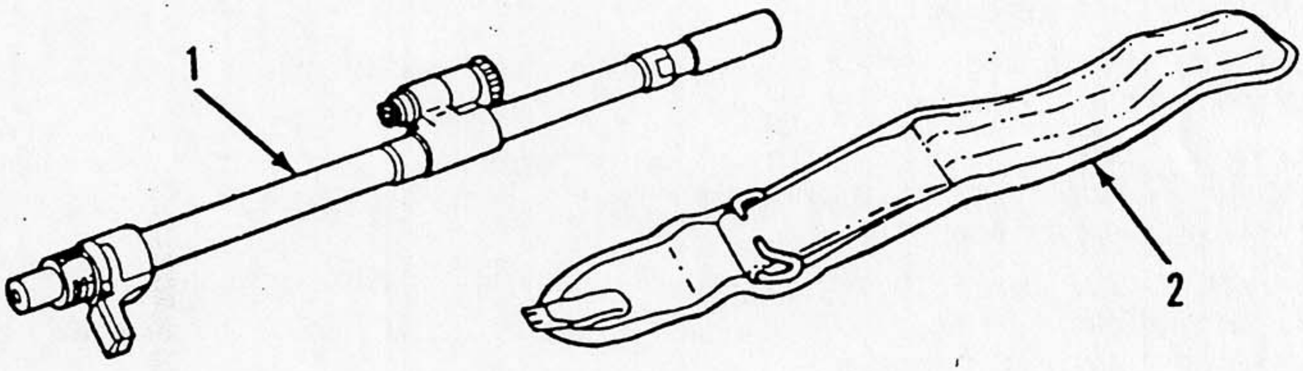
Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

Column (5) - Quantity Required (Qty Rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

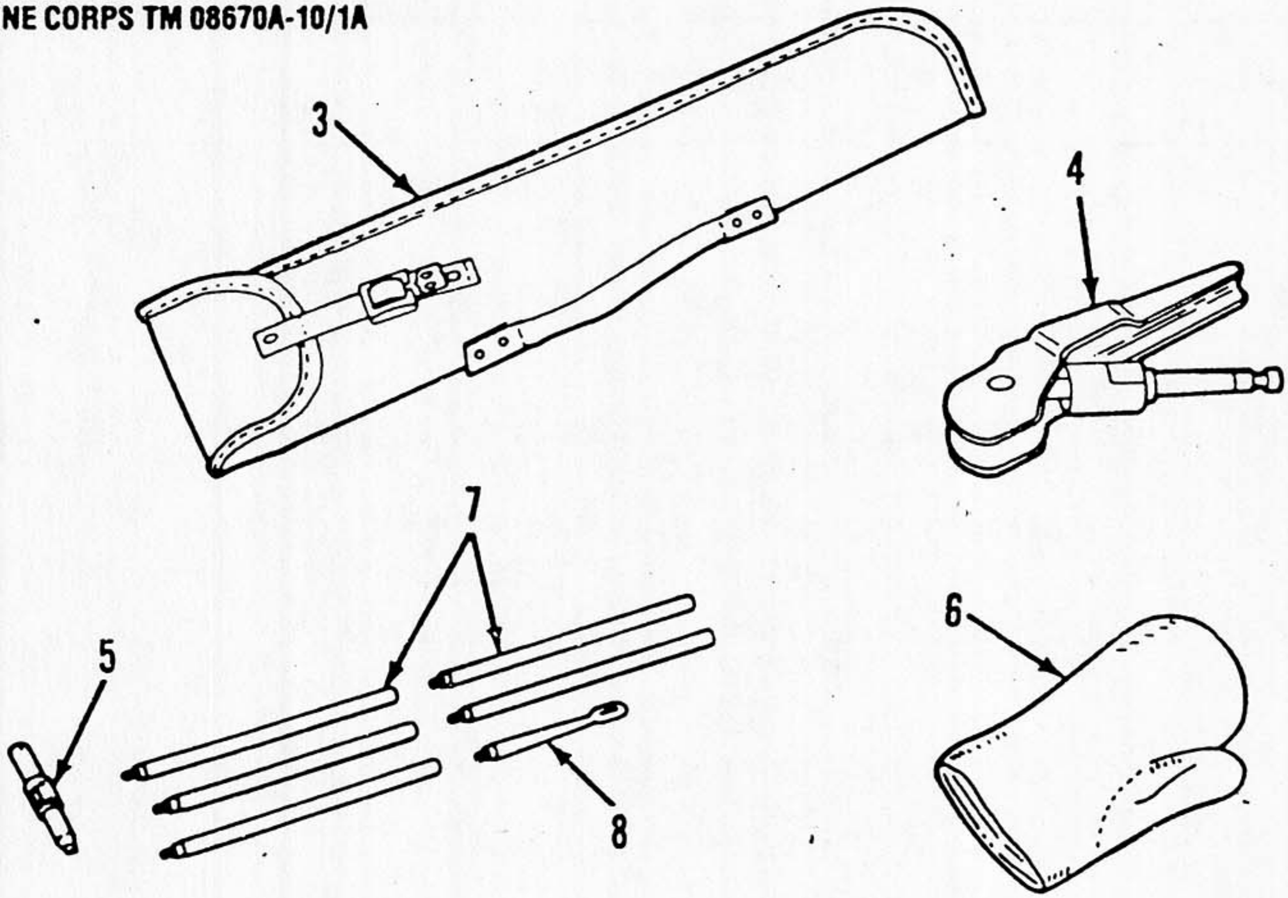
Section II. COMPONENTS OF END ITEM

There are no components of the end item.

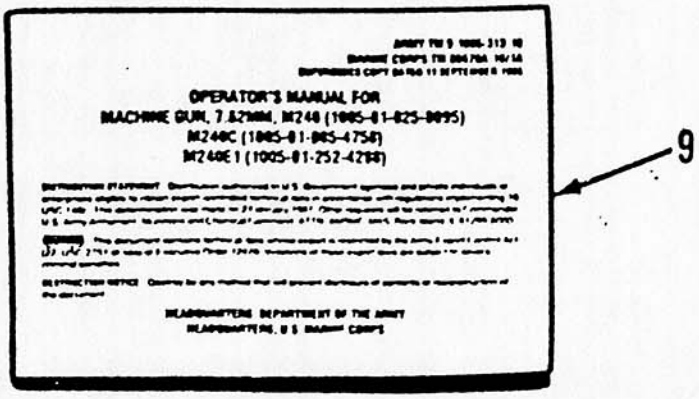
Section III. BASIC ISSUE ITEMS



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
1	1005-01-044-1026	BARREL ASSEMBLY (19200) 11825985		EA	1
2	1005-00-550-6573	CASE, SMALL ARMS CLEANING ROD (19204) 5506573		EA	1



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
3	1005-01-038-6025	CASE, SPARE BARREL (19200) 11826275		EA	1
4	4933-01-033-1510	EXTRACTOR, RUPTURED CARTRIDGE CASE (19200) 11826264		EA	1
5	1005-00-793-6761	HANDLE ASSEMBLY, CLEANING ROD (19204) 7266115		EA	1
6	8415-01-092-0039	MITTEN, HEAT PROTECTIVE M5337 (81349) MIL-M-11199		EA	1
7	1005-00-726-6109	ROD SECTION, CLEANING, SMALL ARMS (19205) 7266109		EA	5
8	1005-00-726-6110	SWAB HOLDER SECTION, SMALL ARMS CLEANING ROD (19204) 7266110		EA	1



OPERATOR'S MANUAL FOR
MACHINE GUN, 7.62MM, M240 (1005-01-025-8095)
M240C (1005-01-085-4758)
M240E1 (1005-01-252-4288)

HEADQUARTERS, DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. MARINE CORPS

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RQR
9		TM 9-1005-313-10/TM 08670A-10/1A		EA	1

APPENDIX C
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

SCOPE. This appendix lists additional items you are authorized for the support of the machine gun.

GENERAL. This list identifies items that do not have to accompany the machine gun and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

EXPLANATION OF LISTING. National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER	USABLE ON CODE	(3) U/M	(4) QTY AUTH
	CTA AUTHORIZED ITEMS			
1005-01-033-3925	BRUSH, CLEANING, GAS CYLINDER (19200) 11826118		EA	1
1005-00-556-4174	BRUSH, CLEANING, SMALL ARMS BORE (10001) 5564174		EA	2
1005-00-690-3115	BRUSH, CLEANING, SMALL ARMS CHAMBER (19205) 7790452		EA	1
1005-00-350-4100	BRUSH, CLEANING, SMALL ARMS RECEIVER (19204) 8448466		EA	1

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER	USABLE ON CODE	(3) U/M	(4) QTY AUTH
4933-01-047-3394	REAMER, CLEANING (19200) 11826036		EA	1
4933-01-033-1504	SCRAPER, COMBINATION REGULATOR (19200) 11826005		EA	1
4933-01-033-1503	TOOL, COMBINATION SCRAPER AND EXTRACTOR (19200) 11826059		EA	1

APPENDIX D
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

SCOPE. This appendix lists expendable/durable supplies and materials you will need to operate and maintain the machine gun. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/ Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

EXPLANATION OF COLUMNS.

Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in he narrative instructions to identify the material (e.g., "Use cleaner, lubricant and preservative item 1, app D)").

Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed tem.

C - Operator/Crew

Column (3) - National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

Column (5) - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C		CLEANER, LUBRICANT AND PRESERVATIVE: grade 2 (CLP) (81349) MIL-L-63460	
		9150-01-102-1473	1/2 oz bottle	EA
		9150-01-079-6124	4 oz bottle	EA
2	C		CLEANING COMPOUND, SOLVENT: rifle bore cleaner (RBC) (81349) MIL-C-372	
		6850-00-224-6656	2 oz can	EA
		6850-00-224-6657	6 oz can	EA
3	C		LUBRICATING OIL, WEAPONS, (LAW) (81349) MIL-L-14107	
		9150-00-292-9689	1 qt can	EA

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
4	C	9150-00-889-3522	LUBRICATING OIL, WEAPONS: semi-fluid (LSA) (19204) 8436793 4 oz bt	EA
5	C	7920-00-205-1711	RAG, WIPING: cotton (58536) A-A-531 50 lb bdl	LB
6	C	1005-00-288-3565	SWAB, SMALL ARMS CLEANING: cotton (19204) 5019316 1 pkg (1000 per pkg)	EA

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